VOLUME 26
NUMBER 12

Journal OF THE American Dietetic Association

Publishing Office
Mt. Royal and Guilford Aves.
Baltimore 2, Md.

American Dietetic Association
620 N. Michigan Ave., Chicago 11, Ill.

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The Journal of the American Dietetic Association is published monthly by the American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., and 620 N. Michigan Ave., Chicago 11, Ill. Neither the Association nor the Editor assumes responsibility for the opinions expressed by authors of papers abstracted, quoted, or published in full in this Journal.

Subscriptions: Rate $5 per year. Special rate to undergraduate students and dietetic interns in approved internships, $1.50 per year, if order is approved by head of the department. Single copies, 75 cents. All correspondence concerning Journal subscriptions, orders for copies, or reprints from the Journal, and notices of change of address should be sent to the American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., or 620 N. Michigan Ave., Chicago 11, Ill. Notices regarding change of address should reach the publisher by the 23rd of the month before the date of issue on which the change is to take effect and both old and new addresses should be given.

Editorial Correspondence: All articles and notices for publication, general correspondence, and inquiries should be sent to the Editor at the American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill. Manuscripts are accepted for publication on condition that they are contributed solely to the Journal. Copy must be double-spaced and two copies, an original and one carbon, submitted.

Advertising: All correspondence concerning advertising should be addressed to the American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill.

COPYRIGHT, 1950, BY THE AMERICAN DIETETIC ASSOCIATION Printed in U.S.A.
Entered as second-class matter June 30, 1925 at the Post Office at Baltimore, Md., under the act of August 24, 1912
Published monthly by The American Dietetic Association

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Report of the Executive Board: 1949–50[1]

ELIZABETH PERRY

President, The American Dietetic Association, and *Chief Dietitian and Assistant Superintendent, City Hospital, Cleveland*

IT IS MY privilege to present to you the annual report of the Executive Board of the American Dietetic Association, which is a summary of the activities of the Association for the year. The active participation of a large number of the members has made possible the achievement of the twin goals which were our guide for the year—"growth within our organization" and "growth in service to all." This is evidenced in the leadership shown in community activities and cooperation with other organizations, as well as by the broadened interests and varied demands made upon our profession today, denoting the quiet respect and strong leadership which is ours as a truly *great* profession.

Each year special assignments have been given to the Executive Board as a result of the past year's activities. The first and major assignment this year was to establish the mechanics of the new organization of government approved at the Annual Meeting in Denver when the new Constitution was adopted.

GOVERNMENT

The new Constitution stated that the government of the Association shall be vested in:

(a) An Executive Board (five elected officers).

(b) A House of Delegates and its Council.

(c) A Coordinating Cabinet, whose voting membership consists of the five elected officers, the four Section Chairmen, and the Council of the House of Delegates.

EXECUTIVE BOARD

The Executive Board has been decreased from a total of nine members—the five elected officers and the four Section Chairmen—to the five elected officers, which means that the members of the Executive Board are now elected by the membership.

HOUSE OF DELEGATES

Membership in the House of Delegates at present consists of the eighty-six elected delegates, the five elected officers of the Association, and the four Section Chairmen. Next year, in addition, the House of Delegates will include the six delegates-at-large elected on this year's ballot.

COUNCIL OF THE HOUSE OF DELEGATES

This year the Council of the House of Delegates consisted of the Speaker and the four delegates elected by the House. However, with the ballot voted upon this year, the Council membership will meet the constitutional requirements of seven members—the Speaker, Speaker-Elect (ex-officio), two delegates-at-large, and four delegates elected by the House of Delegates.

COORDINATING CABINET

This new body of our Association's government is a coordinating unit which includes the Executive Board, the Council, and the Section Chairmen. The increased representation has been of utmost value. This broadened view of the members' interests and problems has definitely strengthened the year's program.

Every effort has been made to keep you informed of the progress of the work through the "Association Affairs" column in the JOURNAL, the *Courier*, the Section reports, the reports of activities with allied professions, the *Public Relations* and *Vocational Guidance Newsletters*, and other special releases.

However, I do wish to report to you as briefly as possible, yet giving due credit, the work and accomplishments of your officers, committees, delegates, and staff. It is also important that you know of the large number of services rendered to you, the membership, in addition to the benefit you receive from the JOURNAL of which we are so proud. However, what is done with this service depends on what advantage you may wish to take of these opportunities.

NOMINATING COMMITTEE

As stipulated in the new Constitution, the report of the Nominating Committee, was submitted by April 1, rather than June 1, as formerly. This meant that the Nominating Committee needed your recommendations for possible nominees *immediately* after

[1]Presented in Washington, D. C., at the business meeting of members of The American Dietetic Association on October 17, 1950.

1949	1950	1951
Executive Board		
9 members Elected officers ..... 5 Section chairmen ..... 4 Chairman of Council of House of Delegates (ex-officio)	5 members Elected officers 5	5 members Elected officers 5
Coordinating Cabinet		
	13 members Elected officers ..... 5 Section chairmen ..... 4 Council of House of Delegates (elected by the House of Delegates) 4	15 members Elected officers ..... 5 Section chairmen ..... 4 Council of the House of Delegates Delegates-at-Large (elected by members) ..... 2 Delegates (elected by House of Delegates) ..... 4 Speaker-Elect (ex-officio)
Council of the House of Delegates		
5 members Delegates (elected by the House of Delegates 5	5 members Delegates (elected by the House of Delegates) ..... 4 Speaker (elected by members) 1	7 members Speaker (elected by members) ..... 1 Delegates-at-Large (elected by members) ..... 2 Delegates (elected by the House of Delegates) ..... 4 Speaker-Elect (ex-officio)
House of Delegates		
191 members Delegates (elected by states)... 181 Delegate-at-large (elected by members) ..... 1 Elected officers ..... 5 Section chairmen 4	96 members Delegates (elected by states)..... 87 Elected officers ..... 5 Section chairmen 4	103 members (approximation) Delegates (elected by states—exact number depends on members in states) ..... 87 Elected officers ..... 5 Section chairmen ..... 4 Delegates-at-Large (elected by members) ..... 6 Speaker-Elect (elected by members) 1
RESPONSIBILITY		
EXECUTIVE BOARD Development of policy Administration of Association affairs Direction of program of work	EXECUTIVE BOARD Administration of Association affairs	EXECUTIVE BOARD Administration of Association affairs
	COORDINATING CABINET Coordination of membership activities Development of policies and program of work Initiation of activities	COORDINATING CABINET Coordination of membership activities Development of policies and program of work Initiation of activities
HOUSE OF DELEGATES Legislative body	HOUSE OF DELEGATES Advice on policy Implementation of program of work	HOUSE OF DELEGATES Advice on policy Implementation of program of work
MEMBERSHIP	MEMBERSHIP Electoral functions Amends constitution	MEMBERSHIP Electoral functions Amends constitution

the Annual Meeting last fall. The new Constitution also directed that the ballot be submitted according to area representation, to be established by the Executive Board. This the Executive Board did at its meeting in December, so that the Nominating Committee could start to function without delay.

In February the Nominating Committee met in Chicago at the time of the Coordinating Cabinet meeting and filed its report that day. It was not easy; Lucille Refshauge, Chairman, and the other members of the committee deserve a special vote of thanks for their work.

In 1951, the report of the Nominating Committee must be submitted even earlier—February 1; therefore, your recommendations are needed immediately. This request is made annually for three reasons: first, it is your privilege and responsibility to have a voice in the candidates selected; second, the small group which comprises the Nominating Committee cannot possibly be aware of all of our capable members who should be considered; and third, the large increase in the number of candidates necessary under the new Constitution.

PUBLIC RELATIONS

The Executive Board in October, 1949, recommended the discontinuance of the services of J. Walter Thompson Company, to be effective January 1, 1950. This action followed the recommendations made by the Public Relations Committee in 1948, which were:

(a) That the public relations program be established as a permanent function of the Association for the two-fold purpose of improving the status of the profession and helping it grow numerically.

(b) That serious consideration be given in the future to employing a public relations director with an office in the headquarters of the Association.

Thelma Pollen was appointed to the staff as Director of Public Relations effective April 15, 1950.

The leadership in these important activities is well known to all, through the excellent *Public Relations* and *Vocational Guidance Newsletters* and the exhibits which are available for loan. I could not, in fairness, report all of the activities of the Public Relations Committee. The complete report will appear in the *Proceedings*. I shall only call your attention to the new literature completed this year:

(a) "Dietitians Today—A Fact Sheet for You."

(b) "A.D.A. Descriptive Folder" has been revised in line with the new Constitution. This publication is sent to new members of the Association and serves many purposes.

(c) "Dietetics, A Career for Better Living" is the theme of the new poster designed to interest young women in our profession.

The *Public Relations* and *Vocational Guidance Newsletters*, which carry the story of the activities of many states, and the reports of additional activities in the excellent state bulletins show that dietitians have earned an award of merit for the excellent public relations we are now enjoying.

The work completed by the Educational Exhibits Committee this year has been most gratifying. A new portable exhibit, which is outstanding for the ease with which display material may be changed to fit particular needs and the ease of handling, has been prepared. Already it has been used by many states. More recently the Educational Exhibits Committee has completed a new large exhibit which you will see here in Washington.

As I stated last year, "Good public relations cannot be bought—they must be deserved." They can be deserved only by each individual doing her work effectively; by cooperating with all other groups for the public good; by being active in community affairs; by participation and leadership in professional affairs; and by wise education of the public concerning the value of the services we render.

The work of the Public Relations Committee and its sub-committees—namely Vocational Guidance and Educational Exhibits—deserves special mention, perhaps because every member of the Association is a public relations representative assisting the Public Relations Committee.

PUBLICATIONS

"The Economic Status of Dietitians, 1949" is now available from the Association office. The brochure, "Outlook for Women in Dietetics," released September 25 by the Women's Bureau, U. S. Department of Labor, is available at this meeting.

The revised *Quantity Food Service Recipes* is now at the publishers and should be released early in 1951. The chairman of this committee was Margaret E. Terrell.

AWARDS, SCHOLARSHIP, AND LOAN FUND BOARD

The Awards, Scholarship, and Loan Fund Board, whose chairman is Dr. P. Mabel Nelson, has had three assignments this year:

(a) The selection of the person to receive the Mary Swartz Rose Fellowship.

(b) The approval of applications for loans for graduate study.

(c) The selection of the candidate to receive the Marjorie Hulsizer Copher Memorial Award.

Applications for loans for graduate study have been received from six members, and five loans have been granted.

The Executive Board of the Illinois Dietetic Association this year presented the M. Faith McAuley Loan Fund of $1200 to the American Dietetic Association with the following stipulation: "That the fund may be loaned to a graduate of any college or university who gives evidence of outstanding ability, adequate preparation, and experience for graduate work in food administration; the recipient of

the Fund to be selected by the Awards, Scholarship, and Loan Fund Board of the American Dietetic Association."

COMMITTEES

FINANCE COMMITTEE

The Finance Committee which meets twice a year guides our expenditures, recommends means for new sources of income, and evaluates investments which are the most beneficial to all. Their reports as they are given to you should be analyzed and studied.

For the fiscal year of 1949, the financial statement shows a deficit of $329.71. The major factors which contributed to this deficit, as reported by the Treasurer, Winifred Howard Erickson, are:

(a) Decrease in income realized from the Annual Meeting. This decrease was anticipated because of the geographical location of the 32nd Annual Meeting in Denver, and consequent reduction in attendance and exhibitors.

(b) The expense of sending the national representatives to state meetings exceeded contributions from the states. Some states failed to follow procedures recommended in 1948 to assist equally in defraying such expense. Representatives attended thirty-three state meetings. The expense amounted to $700.

(c) The added expense in connection with greater representation at the mid-year Council and Coordinating Cabinet meetings. This is a result of the acceptance of the new Constitution.

(d) The inheritance of past commitments completed and paid for this year, which include:

1. Legal consultation fee in connection with revision of the Constitution.
2. Printing of "Economic Status of Dietitians, 1949."
3. Preparation of series of articles for consulting dietitians working with institutions without trained personnel.
4. Posters, etc.

(e) Failure of some members registered with the Placement Bureau to pay fees. Uncollectible Placement Bureau fees in the amount of $410 were written off as bad debts. (Had it not been for this one item, the financial report of the Association would not have shown a deficit.)

(f) Increase in cost of supplies and general expenses.

However, regardless of the deficit as shown for the fiscal year, the Association is in good financial condition.

Life Membership

This year, in addition to its regular functions, the Finance Committee was assigned the task of interpreting the section of the Constitution relative to the new provision for application for life membership. It met in Chicago on December 8, 1949, for this purpose. As you will recall, the former cost of life membership was $100, which was financially unsound. Hereafter, the cost of life memberships will be computed in accordance with the provisions of the Constitution and will be based upon the age of the member at the time she becomes a life member. The tables which each of you received, stating the provisions for life membership, show the cost at various ages from twenty-five to sixty-six years, as well as the saving realized. These tables are based on total dues at $15 a year, payable by an active member for the period of life expectancy.

MEMBERSHIP COMMITTEE

The Membership Committee, which is composed of the Secretary and three other members of the Association, has the responsibility of passing upon the credentials and qualifications of each applicant for membership—other than honorary members.

Dr. Margaret A. Ohlson, in giving the report of the Membership Committee, points out our growth this year. In June, 1949, there were 8264 members of the Association. Since then, 1157 new members have been added, of whom 357 were reinstated; 142 were "experience" applicants, and 658 were from approved dietetic internships. There were 709 members dropped for non-payment of dues; 148 resigned; 7 were lost by death—making a total loss of 864. This left a total membership on June 1, 1950, of 8557, or a net increase of 293 members.

Recently I was given the figures on the number of active members from 1945 to the present, which should be of interest to you.

Fiscal Year	*Number of Members*
1917	58
1944–45	7116
1945–46	7491
1946–47	7781
1947–48	8050
1948–49	8264
1949–50	8557

TELLERS COMMITTEE

This committee, appointed according to the new Constitution, submitted its report early in September. Of the 8557 members, 3127 voted. The members of this committee were Audrey Stoughton, Marie C. Matte, and Judith Judd, Chairman.

CONSTITUTION COMMITTEE

This committee has been idle this year. However, after one year's trial of the new Constitution, needed changes may be apparent. The chairman is Dr. Helen S. Mitchell.

COMMITTEE ON THE HISTORY OF THE AMERICAN DIETETIC ASSOCIATION

This year the Committee on the History of the Association has been very active, and through the

untiring efforts of Anna Boller Beach, who has been the chairman for several years, the *History* is rapidly being brought up to date.

COMMITTEE ON HISTORY OF NUTRITION AND DIETETICS

The work of this committee has been published through the state bulletins. It was also responsible for the publication in the JOURNAL of three historical articles. Dr. E. Neige Todhunter is the chairman.

SPECIAL COMMITTEES

Special committees are appointed to study and make recommendations to meet the demands of current issues which affect our professional interests. Each member of the Association benefits from this work, yet we are sometimes unaware that such service is rendered.

Academic Requirements Committee

Dr. Margaret A. Ohlson is chairman of this committee which met this fall to study the established academic requirements for membership, study the changes being made in the curricula of many colleges, and to evaluate the similarities and differences as compared with our present academic requirements. The committee's recommendations are to be presented at this meeting.

Committee to Study the Revision of the Job Analysis of the Dietitian

This committee was appointed as a result of a request by the U. S. Employment Service, U. S. Department of Labor. This study included the job analysis of each field of specialization; the performance requirements—physical, mental, and emotional; the educational requirements; working environment; job relationships; and work performed. Alta B. Atkinson was appointed chairman.

Committee on Mid-Century White House Conference for Children and Youth

With Dr. Ercel S. Eppright as chairman, a committee was appointed to represent the Association at the Mid-Century White House Conference for Children and Youth to be held in December, and to direct our participation in this Conference. A part of our activities is to be an exhibit. As Dr. Eppright stated, "No one is in a better position to point out the relationship between nutrition and the development of children, especially with reference to the mental, emotional, and spiritual qualities of child development, than is the dietitian. Entering into the activities of this Conference offers an opportunity to enlarge the sphere of the dietitian and to add significance to her work." An article pointing up the dietitian's interest and contact with the field of child health appears in the November, 1950 issue of the JOURNAL, prior to the Conference in December.

Advisory Committee for Foreign Students

This committee has been instrumental in informing the Institute of International Education and the U. S. Office of Education of the requirements needed by foreign students who wish to become dietitians. Grace Bulman is the chairman of this committee.

Committee on Research on Dietary Study Methods

Dr. Icie Macy Hoobler, who is the chairman of this committee, presided at a meeting of the members in Detroit in March, the purpose of which was to:

(a) Study the problems involved in obtaining reliable dietary information.

(b) Survey the responsibilities of the American Dietetic Association for training people to participate in dietary studies.

The Committee voted to prepare a series of articles for the JOURNAL for the purpose of alerting the profession to the many problems pertaining to obtaining dietary information and its evaluation and usage. The Committee also suggested the usefulness of a panel discussion on dietary evaluation for this meeting, which was unanimously approved by the Executive Board.

Committee for Planning Course Content for Hospital Administration Students

As a result of an invitation from the Association of University Programs in Hospital Administration, this committee was appointed with Ella Eck as the chairman. Its purpose is to develop an outline for material concerning dietetics that the Association believes to be of value to the hospital administration student.

Loan Library Committee

The purpose of this committee is to investigate and initiate plans for expanding the Loan Library. I am proud to report that a considerably expanded Library is now established, through the untiring effort of Elizabeth Tuft and her committee, working with Margaret L. Ross in the Association office. The Executive Board voted to name the library in the headquarters office "The Lulu G. Graves Memorial Library" in honor of the late Miss Graves, the first President of the American Dietitic Association.

The latter part of July, the Library became the recipient of five rare, historical volumes by Sarah Tyson Rorer, universally acknowledged as the United States' first dietitian. The donor was Mable Dulon Purdy, pupil and associate of Mrs. Rorer.

Members of the Association can assist in developing the Library's service by sending to the Association office their new manuals and teaching guides.

Other Special Committees

Other special committees appointed this year were:

(a) Committee to Study the Cost of Life Memberships for Retired Members.

(b) Committee to Study the proposed International Dietetic Association.

(c) Committee to Continue the Study of the Office and Staff Procedure.

JOINT COMMITTEES

Supporting the overall program are our joint committees with allied professions.

Joint Committee of the American Hospital Association and the American Dietetic Association

For three consecutive years this committee has met twice a year. These meetings have resulted in a mutual understanding of the aims and objectives of the two groups and the areas of possible cooperative effort. Recently a release was sent by the American Hospital Association to 4800 hospital administrators, stating the work of the two committees and including the fact sheet, "Dietitians Today."

Considerable time has been spent on studying the training of non-professional workers. The 1949 Survey of Hospitals made by the American Hospital Association indicated that if the present training of dietitians were *tripled*, one dietitian for each hospital *would not be available*. This study indicates a need for better distribution of dietitians in view of the shortage and the need for developing supervisory personnel to assist the professional dietitian. Agreeing that the small hospital needs assistance because of the unavailability of dietitians, a manual planned to serve as a guide for dietary operation in institutions without trained personnel is being written as a Joint Committee activity of the two groups.

Application was made to the Division of Medical and Hospital Resources, Federal Security Agency, for a grant-in-aid in the amount of $20,800 for the period November 1, 1950 to October 31, 1951, for the purpose of conducting a research or demonstration project as described: "Development of methods by which the individual hospital or all hospitals in a regional area can provide a more effective dietary service to the people of the community." However, Congress did not appropriate funds for conducting studies, experiments, and demonstrations relating to the effective development and utilization of hospital services, facilities, and resources. This action was not unexpected in view of the present international situation. Dr. J. R. McGibony, of the U. S. Public Health Service, has stated that because of the extreme importance of hospitals and related activities it is essential that efforts be continued to promote and explore possibilities of carrying out such work in the absence of federal funds.

Joint Commission for the Improvement of the Care of the Patient

The American Dietetic Association was asked to send representatives to the meeting of the Joint Commission for the Improvement of the Care of the Patient, sponsored by the National League of Nursing Education, the American Nurses' Association, the American Medical Association, and the American Hospital Association. Lucille M. Refshauge and Ruth M. Yakel represented us at this meeting. They presented "Diet Therapy as Part of the Ward Practice for Student Nurses," and "Integration of Dietary and Nursing Staff in the Provision of Patient Food Service." In reporting this meeting, Miss Yakel stated that concern was shown by the group about the continued use of student nurses as regular personnel in the special diet kitchen—a service included as part of their dietary experience.

Joint Committee of the American Home Economics Association, School Food Service Association, and the American Dietetic Association

Bessie Brooks West, as chairman of this committee, is our representative. As a result of the understanding of mutual problems and the need for trained school lunch supervisors which was previously reached, there was little activity by this committee this year.

OTHER JOINT EFFORTS WITH ALLIED ORGANIZATIONS

As has been our privilege for the past few years, we met in December with the *American Association for the Advancement of Science*, as an affiliated member in New York. A program is now being planned for the coming meeting in Cleveland after Christmas.

We continue also to have representation on the *Food and Nutrition Board* of the National Research Council. This year's representative has been Dr. Helen A. Hunscher. At the suggestion of the Food and Nutrition Board, a series of eight articles has been prepared for the use of consulting dietitians and nutritionists working with institutions without trained personnel. The first of these articles was published in the September issue of the JOURNAL.

Just recently we have joined the *International Hospital Association* as an associate member, and we have also affiliated with the *American School Health Association*.

As an Association we have also enjoyed this year having representatives at many meetings and liaison with a number of organizations, some of which were:

Children's Bureau Advisory Committee meeting
Care-UNESCO meeting
National Vocational Guidance Association meeting
American Council on Education meeting
FAO Conference for Non-Governmental Groups
Fifth National Conference on Citizenship
American Home Economics Association meeting
Film Council of America meeting
Citizen's Committee for the Hoover Report
National Conference on the Occupied Countries
School Food Service Association meeting

American Hospital Association meeting
American Vocational Guidance Association meeting
National Conference for the Aged
Crusade for Freedom
National Dairy Research Laboratories
International Dairy Exposition

SECTION ACTIVITIES

There are many members who have been active on the committees of the various sections to whom goes a great deal of credit for the Association's accomplishments; however, I have named only the chairmen, because of lack of time.

This year, in the Sections' activities, an attempt was made to get away from projects formerly listed as state and local association work. This recommendation was made last year because the state associations are strong groups which should and have taken the leadership in developing programs of professional work which meet their own needs. For this reason, only national projects are listed for the Food Administration and Professional Education Sections.

COMMUNITY NUTRITION SECTION—MARY REEVES, CHAIRMAN

Miss Reeves, newly appointed Community Nutrition Section Chairman, has continued the projects suggested by Dr. Gladys Kinsman Lewis.

National Project # 1—Revision of the "Nutrition Bibliography"—Linnea Anderson, Chairman

Copies of the revised "Nutrition Bibliography" have been sent to all state nutritionists and public health nutritionists and are available from the Association office for 50 cents. You may inspect a copy of this bibliography at the Association booth at this meeting.

National-State Project # 1—Joint Activity with the Food Administration Section

The study was continued this year which was begun last of the work being done by dietary consultants in official health agencies to assist institutions without trained personnel.

DIET THERAPY SECTION—MARGUERITE L. PETTEE, CHAIRMAN

The Diet Therapy Section is to be congratulated on the completion of the study of the standardization of calculation of diabetic diets and the short method of calculating the diet. This study was the work of a joint committee of the American Diabetes Association, the Diabetes Branch, U. S. Public Health Service, and the American Dietetic Association. The report of this work was published in the August issue of the JOURNAL. Material based on this report may be purchased from Health Publications Institute, Inc., Raleigh, North Carolina. To keep this study up to date, a committee made up of representatives of these same three organizations has been appointed to continue the study of food analyses. The Association's representatives on this committee are Marguerite L. Pettee and Doris Johnson.

National Project # 1—Revision of "Glossary of Dietetic Terms" in Handbook of Diet Therapy—*Dr. Hazel Hauck, Chairman*

This committee has done intensive work on deciding the kinds of terms to include in this glossary.

National Project # 2—Evaluation of Child Feeding Practices in the Hospital—Lorraine Weng, Chairman

The object of this project was to incorporate into food services for children the group-feeding plan, thus making possible some choice of food for the children.

National-State Project # 1—Evaluation of Food Service for the Aged in Institutions—Vera W. Walker, Chairman

In view of the fact that the life expectancy has increased in the population and that there has been an increase in the number cared for in institutions for the aged, both public and private, the Diet Therapy Section carried out a survey to evaluate the food served to these people. The chairman has submitted an excellent report relative to this study which will be reported to you here in Washington.

FOOD ADMINISTRATION SECTION—MARION FLOYD, CHAIRMAN

Project # 1—Study of Delegation of Dietitians' Duties—Ruth I. Madsen, Chairman

In her report, the chairman points out the value of the time given to a review of the departmental organizational pattern and to a careful evaluation of the present responsibilities which could be delegated to others of lesser training and ability than that of the professional dietitian.

Project # 2—Offering of Workshops, Institutes, or Conferences to Meet Needs of Administrative Dietitians

To implement this project, a committee was appointed at the mid-year Coordinating Cabinet meeting—Alta B. Atkinson, chairman—to compile a questionnaire relative to the needs and desires of the members for this type of activity. Approximately 8500 questionnaires were mailed asking, "Are you interested in a quick review?" Replies were received from 588. The tabulation of the answers has been sent to fifty-eight universities and colleges mainly for their information, also stating our interest in being informed of any institutes, workshops, and refresher courses they may plan. Knowledge of this interest should be helpful to the colleges planning courses for the summer.

This year a number of state associations have sponsored many workshops and institutes; I wish I had the exact number. However, I do know of thirteen, which from all reports were very worth while.

Project #3—Cooperation with State Agencies Administering the Hospital and Construction Act, Public Law #725—Margaret Gillam, Chairman.

As a result of this project, the leadership taken by the state associations has brought about more efficient service layouts in many hospitals.

Project #4—Promotion of Conferences Between Dietitians and Other Groups—Wilma F. Robinson, Chairman

This was a joint project with the Community Nutrition Section, the object of which was to interest state dietetic associations in the promotion of conferences emphasizing the importance of good administration practices and quality food.

PROFESSIONAL EDUCATION SECTION—
DR. ERCEL S. EPPRIGHT, CHAIRMAN

Project #1—Curriculum Study of the Approved Dietetic Internship

The directors of internships have been very active in working on the outlines distributed at the last Annual Meeting in Denver. Special emphasis has been given to condensing the outlines on similar subjects and clarifying the statement of principles. A meeting was held early in December in Chicago with Dr. Hilda Taba and the Chicago directors of internships. At this meeting a partial statement of general needs and objectives which apply to the entire curriculum and sample drafts of units in administration and nutrition were developed. Two outlines—on portion control and the modification of the normal diet—were worked out and they were recommended to the internship directors for use as patterns in developing other outlines. A report of this meeting was published in the June issue of the JOURNAL.

Project #2—Cooperation in Nutrition Education of Other Professional Groups

This project was divided into two parts. The first was concerned with promotion of information in nutrition through the development of a workbook for use in nutrition instruction for nurses. The chairman was Dorothea Horstman. The second part of the project was directed by Martha Nelson Lewis as chairman and was concerned with the dietitian in a team for the instruction in nutrition of medical and dental students.

Although, as stated earlier, no special projects were sponsored by the Professional Education Section at the state and local levels, excellent suggestions were given for state development. Some of these were:

(a) Continued cooperation in recruitment and public relations programs.

(b) Professional assistance to foreign libraries.

(c) Sponsorship of institutes, workshops, or conferences.

(d) Development of plans for summer work experience for college students.

(e) Establishment of scholarship funds for dietetic interns.

HEADQUARTERS STAFF

The staff at the headquarters office serves you each day through their contribution to the varied activities of the Association, because of the responsibility carried by each person.

The Executive Secretary, Ruth M. Yakel, as the administrative head, conducts the affairs of the Association which fall within the scope of the office in accordance with the policy determined by the Executive Board.

The Educational Director, Mable MacLachlan, serves as a liaison officer for the approved dietetic internships in all educational business and affairs. The Dietetic Internship Board, made up of ten members who represent the administrative, hospital, and food clinic fields, works very closely with Miss MacLachlan in evaluating applications for the establishment of new internships as well as reviewing reports made by her following visits to those which are currently established. Dr. Ercel S. Eppright served as chairman of this Board this year.

Miss MacLachlan reports that on October 3, 687 interns had been appointed for this year to the 66 approved internships which can accommodate 782, thus making a shortage of 95 applicants.

Mary Ellen Johnson, Assistant to the Educational Director, under her general direction and in close cooperation with the Membership Committee and the Placement Bureau Director, directs and participates in the processing of membership applications.

The Business Manager, Mildred L. Egeberg, directs the business activities of the Association; works in cooperation with the JOURNAL Editor in handling commercial advertising; and is responsible for convention arrangements relative to exhibits and business contracts, including the sale of exhibit space. The Investigation Board, under the chairmanship of Florance B. King, assists Miss Egeberg in evaluating advertising copy according to the policy established by the Executive Board.

The JOURNAL Editor, Dorothea F. Turner, acts as executive officer of the JOURNAL and directs its publication. The Journal Board—Chairman, Dr. E. Neige Todhunter—acts as an advisor to the Editor. You may have noted the decrease in the size of the JOURNAL, which was due to the drop in advertising

and the problem of maintaining the 55:45 ratio of editorial to advertising matter. This ratio policy established by the Executive Board was made so that the JOURNAL will not carry too much advertising, plus the need for the JOURNAL budget to balance.

Harriet E. Sankey, Managing Editor, under the general direction of the Editor, carries the responsibility for the organization, preparation, and layout of the JOURNAL.

The Director of Professional Activities, Margaret L. Ross, serves as consultant for the program of work, works closely with the state associations and Section Chairmen, and has played an important part in the planning of the program for the Annual Meeting this year. Working closely with Miss Ross on this program has been the Program Advisory Committee, whose chairman has been Adelia Beeuwkes. This committee deserves special recognition for the excellent program we are enjoying here in Washington. It was newly formed this year, and because of its outstanding contributions, it is to be a part of our permanent structure of committee organization.

The Director of Public Relations, Thelma Pollen, directs the public relations program of the Association; handles convention publicity; and works closely with the Public Relations and Vocational Guidance Committees in the development of material for publication.

Margene Wagstaff, Publications Assistant, works closely with the Public Relations Director and the Director of Professional Activities, making an excellent contribution to our various publications and public relations releases.

The Director of the Placement Bureau, Dorothy Weber, interviews and counsels Placement Bureau registrants. The Placement Bureau Board, which is the advisory body for the Placement Bureau, met early in January with the Director and the staff. Excellent recommendations were made relative to a change of plan of service the Bureau might render, possibly counselling. The chairman of this Board is E. Evelyn Smith.

This list of job responsibilities is by no means all inclusive. Each staff member carries many other responsibilities which contribute to the service rendered to members. In addition to the professional staff, we have an office personnel of twenty-one, all of whom contribute to the promotion of the activities of the Association. The entire headquarters organization is doing an outstanding job and is always willing to be of assistance to you.

As I close my report to you, I do so with the full realization that only through the united spirit and willingness of the members of the Executive Board, Council, Coordinating Cabinet, headquarters staff, and every member of the Association can I point with pride to this past year's activities.

There were times when the going was not easy. The resignation of Gladys Hall, our Executive Secretary for six years and our first Educational Director, whose interest in the growth of the Association and sincerity in having the work well done so that all of us could benefit, meant adjustments not only for the Executive Board, but also for those in the headquarters office.

Ruth M. Yakel was appointed as Executive Secretary on June 26, 1950, and is carrying ably the leadership required of this position. With her guidance and the cooperation given by our headquarters staff and the members, I know the Association will continue to grow with increased service.

In the light of present world conditions, I feel that the Association should be giving consideration to the mobilization of dietitians for the various armed services. Inasmuch as governmental officials are indicating that this country will be in a state of military preparedness for a number of years to come, we should consider this a matter of long-term planning. In fact, in all fields of endeavor our sights should be set in terms of future planning, based upon well defined goals.

Today, as never before, we must be aware of the changing world in which we live; we must broaden our thinking to include our social and community responsibility, as well as our professional interest. We must realize that *how* we can assume these responsibilities today will determine to a large degree our success tomorrow, and we must try to learn what we can do to help solve the problems that weigh so heavily on the world today.

We have the opportunity professionally to contribute our share to community life. Through our special skills we have a real influence, but we must always remember that one can contribute much to others only if those others know what you are thinking and trying to accomplish. To be good ambassadors for our profession and to be professionally great, we must be humanly adequate. The leadership shown is the measure of responsibility we take as citizens.

As we face the future, may our deliberations be wise and understanding, and may our courage be high as we plan and work toward accomplishing the aim of the Association—*Quam Plurimis Prodesse*, to benefit as many as possible.

If it were possible to turn the clock back a whole year and start all over again as your President, I would want to do some things that we have left undone and to do some things which we have done a little differently. But, be that as it may, the story is now written and published and cannot be changed. We have accomplished many things, and all of you are entitled to share in our achievements. Thank you one and all for your splendid support.

Dietary Consultation—A Service for Small Institutions

IV. Problems in Sanitation

Compiled by Grace McMahon[1] for the National Committee[2] of the Community Nutrition Section of The American Dietetic Association on Preparation of a Manual for Use in Dietary Consultation Service to Institutions without Trained Food Service Personnel

TWO areas of responsibility in the field of sanitation face the consulting dietitian. The first concerns new building and construction, where advice on the proper layout and equipment can provide the basis of good sanitation for the future. The problems in this area will be discussed later in this series (1). The second area of responsibility involves advising institutions about their sanitary procedures, using the already-existing physical facilities and personnel. Unfortunately, a serious epidemic or an attack of food poisoning may occur before the administration becomes aware of the need for the improvement. During epidemic-free periods much urging is often necessary for even the most necessary improvements to be made.

As Adams (2) has pointed out, sanitation basically and specifically encompasses two fundamental concepts: (a) food free from pathogens which may spread communicable disease, and from organisms or their toxins which may cause food-borne outbreaks; and (b) food free of extraneous and foreign material or substances, adulterants, and other ingredients which may be harmful or offensive to the senses. He also lists seven essential factors to consider when dealing with sanitary production of food: (a) the food handlers; (b) the food itself; (c) the water supply; (d) prevention of rodent and insect infestation; (e) adequate, effective, and efficient refrigeration; (f) dishwashing, sanitizing, storage, and handling of table ware; and (g) good housekeeping practices and sanitary maintenance.

Some of the rules for sanitation will be covered in the following paper by Buchanan (3). The purpose of this discussion is to recognize and consider (a) the problems of the consulting service in promoting sanitation and (b) to provide a critical bibliography consisting of two types of source material: first, selected references that will provide the consultant with new and pertinent material for her own use in evaluating and meeting problems; and second, references to material that can be distributed directly to lay personnel in institutions.

THE FOOD HANDLERS

Training in Sanitary Procedures

Recognizing, as Buchanan states (3), that the foundation of sanitation comes from the people, the consultant's initial concern is with the employees of the institution concerned. Her problem may be not only to teach sanitary food handling procedures, but to develop in the employees a fastidious sense of personal hygiene. Although a complete program for class instruction is not possible or practical in the majority of small institutions (4), it *is* possible to use group instruction for improving sanitary standards and procedures by including other food service groups in the community or area.

In presenting such a course, the cooperation of the state or local health department can usually be obtained (5). In some communities, the local dietetic or restaurant associations have sponsored such courses in which employees from a number of institutions participated (6).

The number of sessions may vary, depending upon how detailed a course is desired. The U. S. Public Health Service has prepared a suggested outline for a food handlers' course (7) as have Rowland and Fritz (8). Drayer (9) has presented the sub-

[1]The advice and assistance of the following people is gratefully acknowledged: Mildred Bonnell, Felisa Bracken, Mary Ellen Dambold, Margaret B. Dreisbach, Mary Griffin, Clarice Gullickson, Jane Hartman, Marjorie Heseltine, Edith Holt, Helen Hunscher, Cora Kusner, Rosalind Lifquist, Juanita Cochran Miller, Mary W. Northrop, Helen Phaneuf, Hazel K. Stiebeling, Frances Swenson, E. Neige Todhunter, and members of the Executive Board and staff of the American Dietetic Association.

[2]Members of the Committee were: 1946–48—Margaret Walsh, Chairman, Magdalin K. Espy, Elizabeth Perry, Theresa Powers, Wilma Robinson, and Pearl Rorabaugh; 1948–49—Adelia M. Beeuwkes, Chairman, Magdalin K. Espy, Elizabeth Perry, Mary Agnes Pohl, Wilma Robinson, Pearl Rorabaugh, and Jane Sedgwick.

ject matter of a three-session course, including examples of examination questions used. He points out that the method of instruction may vary, and that in some instances only movies may be shown. However, it is recommended that such visual aids be followed by other teaching devices, for films may need to be further personalized to attach meaning to their particular subject matter. Also, in using films, some introductory explanation, as well as a resumé to emphasize important points, may be given. As Mallmann (10) has stated, not only should correct sanitary procedures be carefully taught, but the reasons for each step should be fully explained.

There are many other sources of help for instructors (11–14), including films (15–17) and posters (18), which are available from several organizations.

After class presentation, the subject matter will need to be specifically applied to the working habits of the individual employees. Otherwise, the material may remain far removed from actual practice. Posters used in class may be put up in working places where they are particularly pertinent, but they should be changed frequently, for they lose their effectiveness if allowed to stay up too long or if too many are posted at one time.

Also, refresher courses to follow the original classes may help to maintain a high level of interest in sanitation. New employees will, of course, require complete indoctrination in attitude as well as instruction in procedures.

In addition to the general aspects of sanitation and personal hygiene which may be presented to the group, there are special problems of sanitation which may need to be presented individually or to smaller groups. This would be at the discretion of the consultant. Problems in food preparation and dishwashing—some of the most important in a safe food operation—could pertain to the whole group if it were small, but they might also apply only to the employees performing those tasks.

Employees' Misconceptions

The many misconceptions which employees have concerning food preparation may prove a hindrance to good sanitary practice. For example, carelessness in sanitary measures during food preparation may prevail because the employees assume that the heat of cooking will destroy germs and thus make sanitary methods unimportant. Tanner states (19) that while it is known that heat will destroy microorganisms, this maxim is based largely on results of experiments conducted in the laboratory under known and well controlled conditions which rarely obtain in the cooking of food in which wide variation in rate of heat penetration exists. Liquid foods allow quite rapid penetration of heat by convection, while heat penetrates solid masses of food more slowly by conduction. Investigation has shown, for example, that heat penetration in a spaghetti dish was insufficient to kill *Eberthella typhosa* in the center. Also, the low temperatures used in the roasting of meats, cooking of eggs, or the frying or boiling of fish was not sufficient to kill pathogenic bacteria. Thus cooking cannot be relied upon to compensate for carelessness in handling and preparation. Clean, healthy people must prepare the food, and it must be kept clean at every stage.

Another idea frequently encountered is that of smug satisfaction with present procedures because the institution has had a history free from any serious outbreak. Perhaps examples of the disease outbreaks as reported to the U. S. Public Health Service (20) may show situations where disease has been caused by practices similar to those in the institution in question. It may also be necessary to insist that the standards of procedure for institutions be higher than those in the employees' own homes.

FOOD PURCHASING

After discussing these misconceptions, the consultant should investigate the present procedures in an institution. Food preparation, as it has been discussed, presumes the purchase of wholesome, disease-free food. An inquiry into purchasing practices of institutions may reveal purchases of ungraded meat or raw and unclean milk. The source of the water (21, 22) is also important.

In institutions where much of the food is produced on their own or surrounding farms, the problem of sanitation must reach back into the processes of production, slaughtering, grading, processing, and preservation on the farm. It is here that the services of the state agricultural experiment stations and extension services as well as the local health department can be of help. Local canning and freezing procedures (23) will need to be investigated.

Many institutions, especially small ones, have been dependent on contributions of home canned foods. There is no way to determine how these foods have been processed. In these cases, the instruction that such food be boiled at least 15 min. even before it is tasted is a necessary precaution. Perhaps the consulting dietitian can use her influence to change the method of contributing so that gifts of money instead of food are made.

FOOD POISONING

One of the greatest dangers in food preparation and service is from food poisoning (24–29). Of all the different types of poisoning, the one which has had the most widespread publicity is botulism, which produces spectacular symptoms. Of more direct significance to the institution, however, is the possibility of toxin development from a Staphylococcus infection of an open sore. The toxins produced by certain organisms may be responsible for more serious

aspects of illness than the organism itself. The toxin may not be detectable by taste or odor, and it may develop within 4 hr. in any food not refrigerated at 50°F. or below, either intermittently or continuously. *It is not destroyed by heat.* This type of food intoxication is mentioned because in a kitchen kept scrupulously clean otherwise, conscientious economy may become dangerous. The thrifty employee hesitates to discard what he considers to be "good food," and may use leftovers which have been standing at room temperatures for more than 4 hr. In this case, the consultant may be able to give help in the preparation of more exact amounts, thus eliminating leftovers.

Since trichinosis is not uncommon, its nature and prevention should be discussed in relation to food preparation (30, 31), and the danger of serving "pink pork" must be emphasized continually.

DISHWASHING

Methods of cleaning dishes and utensils vary a great deal from one institution to another (32), depending upon the physical equipment and the personnel. A description of recommended physical equipment will be given later in this series (1). In addition, there are many excellent articles and guides written on the subject by government and private agencies (32–41). Films on procedures may be obtained from government and commercial sources (15–17).

The consultant may be asked to recommend detergents. In this connection, a reference to tests which can be used in appraising such supplies (40) may be helpful, as well as a general description of the types of detergents available and their functions (42).

Personnel who have had no previous experience with mechanical dishwashing equipment may feel that when such a dishwasher is installed, the problem of sanitation has been solved. In this case, the consultant may need to supplement information from the equipment manufacturer, emphasizing the importance of pre-rinsing as well as wash and rinse temperatures and detergent concentration. The consultant may also find it necessary to review hand dishwashing methods for institutions where proper mechanical equipment is not available. An outline of such a procedure (13, 43) might be of help. If it is impossible to maintain temperatures of 170°F. for rinse water, it may be desirable to recommend the use of chemicals, such as chlorine, as a sterilizing agent instead of hot water (44). In such a case, the three-compartment wash and rinse vats are needed. If hypochlorites are to be used, the U. S. Public Health Service recommends immersion for at least 2 min. in a luke warm bath containing at least 50 parts per million of *available chlorine.* If the chemical is a chloramine, a concentration of equivalent bactericidal strength may be used for the same 2-min. period. Many localities accept quarternary ammonium compounds for sterilization purposes. Local laws vary, so the requirements in each community should be investigated. Research is now underway to develop other disinfectants which will be practical and effective for use in situations where it is impossible to maintain proper temperatures for rinse waters.

As Buchanan states (3), the importance of proper dishwashing procedures in hospitals caring for communicable disease requires special attention.

OTHER ASPECTS OF SANITATION CONTROL

While the proper personnel procedures are basic to any sanitation program, the maintenance of proper physical facilities by management are of equal importance, and the consultant may also need to provide detailed instructions for cleaning specific pieces of equipment (39, 45–48). To help her appraise the situation, the following questions will be helpful: Is an effort being made to provide equipment which can be cleaned easily and quickly (49–53)? Will better sanitation be one of the considerations in the purchase of equipment even though the initial expenditure is greater?

Other problems may be real Gordian knots. For example, many institutional kitchens were constructed before sinks for washing hands were a requirement in dietary department blueprints. In such instances, it is not a simple procedure to provide sinks in already-existing layouts.

Consultants have also expressed concern over the lack of provision of uniforms in many institutions. To initiate the use of uniforms, of course, means an additional expense which can justify itself in resultant safer, cleaner food service. Management may find such an expenditure difficult to approve in view of financial demands from other departments, but the administrator should be informed of this primary requisite of sanitary food service, nevertheless.

Pest control, too, may be a problem the consultant will encounter. In dealing with it, the rules Buchanan (3) has listed will be useful. The consultant may find however, that the services of an exterminator should be recommended, and she will want to provide lists of licensed companies in the vicinity to the management. The control of flies in the warm months may even require the soliciting of aid from the board of health in ridding the vicinity of breeding places.

As the consultant surveys a department or institution, it may be helpful to have check lists which include an enumeration of points necessary for good sanitary control. A number of such lists are available (35, 40, 42, 54–56). In addition, it may be quite profitable to provide institutions with their own lists so that they may check thoroughly their own operations. No better method of sanitation control can be developed than a consciousness of sanitation within the institution itself.

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- (b) Regional offices of the U. S. Public Health Service
- (c) State departments of education
- (d) University extension divisions
- (e) Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York, N. Y.
- (f) Castle Films, Inc., 30 Rockefeller Plaza, New York 20, N. Y.

(17) Film catalogs
- (a) The Educational Screen, 64 E. Lake St., Chicago, Ill.
- (b) Encyclopaedia Britannica Films, Inc., 1150 Wilmette Ave., Wilmette, Ill.

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Dietary Consultation—A Service for Small Institutions

V. Some Rules for Sanitation

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SANITATION is a way of life. It is the quality of living that is expressed in the clean home, the clean farm, the clean business and industry, the clean neighborhood, the clean community. Being a way of life, it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations." Let us accept this, the National Sanitation Foundation's definition of sanitation, as a guide in establishing rules of sanitary conduct. After all, cleanliness is not a thing for today or tomorrow—it is a quality of living.

PERSONAL HYGIENE AND FACILITIES

This quality of living, the basis of sanitation in food service, starts with the employees themselves. A consideration of their personal habits should come first in their training, with emphasis on the daily bath; clean uniforms; hand washing; care of teeth, fingernails, and hair; and the reporting of colds and infections. After training employees in personal cleanliness, they should be shown the facilities at their disposal to aid them in personal care. These facilities should include: clean toilet rooms with handwashing sinks; soap; single-service towels; covered waste containers; "Wash Hands Before Leaving" signs; proper locker rooms for men and women, with ventilated lockers, benches, or chairs and a sanitary-type lounge in the women's locker room (never a bed). A full-length mirror on the door with a sign to "See Yourself as Others See You" usually helps in keeping employees presentable.

THE GENERAL SANITATION OF PREMISES

Rodent Control

One of the greatest dangers to good general sanitation of premises is pest infestation. The most common pests are rats, mice, flies, and roaches, although sometimes other types of insect pests, such as weevils, mites, and bed bugs, may be encountered. Insects breed and multiply in a matter of days and in some cases even in hours. Rats and mice breed in about twenty-one days, so that what may be only a minor infestation today, if neglected, may be a major one next week.

In controlling any pests, the biologic principle must be recognized that pests require ingress, harbors or breeding places, food supplies, moisture, and warmth. No control methods can be successful unless these factors are controlled.

First, let us consider rodent control. To control rats and mice successfully, a building must be completely rodent-proofed. In those areas where the Norway rat is found, rat-proofing from the basement floor to 4 ft. above grade is usually sufficient. Where the roof rat is prevalent, the whole building will need to be rat-proofed to keep out this climbing variety. Young rats will enter through any circular or square hole $\frac{1}{2}$ in. in diameter or through any slot over $\frac{1}{4}$ in. across. To be sure a building is rat-proof, frequent inspections should be made of the outside of the building. All openings around pipes, conduits, and wires, and all breaks in the foundation or walls should be closed with metal or hard cement. This constitutes

the outer line of defense. Then the interior must be checked, and all breaks in the basement floors or in walls and partitions should be closed with hard cement at least 3 in. thick.

Floor drains should be covered with a metal plate having an opening for drainage not greater than $\frac{1}{2}$ in. in diameter, if the openings are round or square, or not more than $\frac{1}{4}$ in. across if they are oblong. This is to prevent the entrance of rats and mice into a basement from the sewer. All outside windows and ventilating openings should be covered with $\frac{1}{2}$-in. mesh hardware cloth for the same reason.

Finally, it is necessary to remove harbors within the building. This can be done by discarding all articles not needed for the daily operation of the institutions. Too often old equipment, discarded fixtures, surplus advertising material, boxes, bottles, and similar miscellaneous material are kept in the basement.

After the building has been made structurally ratproof, extermination may be undertaken. If infestation is heavy, a licensed pest control company should be consulted. If the infestation is light, traps may be used. The best procedure is to pre-bait for several days with non-poisoned baits using cereal, meat, canned fish, nuts, or fruits and vegetables. This establishes feeding stations and helps to determine the right type of bait. After preparing a popular bait, an adequate amount of some relatively non-toxic-to-humans poison, such as Red Squill or Antu, should be used. More toxic poisons should be used only by pest control operators. For mouse control, 25 per cent wettable DDT powder dusted on the floors beneath bottom shelves and behind cabinets and file cases has been found to be effective. Care must be exercised to see that this material does not get into food products directly or indirectly. Permanent bait stations, are of great value in the control of rodent pests.

Insect Control

The control of insects is of equal importance. Much can be accomplished by sealing the breeding places of roaches, silver fish, and many other insects. Cracks behind shelves, along baseboards, in plaster, and similar places should be closed either by repairing and refitting where required or by caulking with a flexible caulking compound. This compound can be painted over to make a presentable repair. After sealing the breeding places, there should be a thorough cleaning to remove all grease and food particles.

Employees should be trained to take care of broken packages and to clean up spilled food immediately. Leaking faucets and pipe lines should be repaired, for rats, mice, and most insects require moisture. Properly fitting screens should be provided on windows and doors to keep out flying insects.

Finally, provision should be made for the use of proper insecticides. In using them, care should be taken to prevent either sprays or dust from coming in contact with dishes, foods, or surfaces on which foods may be placed.

Most insects today can be controlled by such lasting types of insecticides as chlorinated hydrocarbons (chlorodane), DDT, or its analogues. The manufacturers of these products will furnish full information on precautions and methods of application, or any good pest control company will be glad to assist or advise as to how to proceed.

Sanitation of Equipment

A few general principles, if followed, will result in good sanitation of equipment. Equipment should be located and spaced so that each piece may be thoroughly cleaned inside and out and on all sides. Equipment should either be tightly secured and flush to the floor or raised high enough that cleaning under it may be done readily. All surfaces in contact with food should be accessible and capable of being cleaned easily, and should be smooth and made of non-corrosive material. There should be no open cracks, joints, or dents in which food may gather to undergo decomposition. Equipment should be cleaned after each use. If it is used only occasionally, it should be cleaned after each use and again before re-using.

Sanitation of Store Rooms

Trash, equipment, and food often accumulate in store rooms so that articles cannot be found when needed. To prevent this, store rooms in the basement or other parts of the building should be carefully maintained.

Items should be stored in an orderly manner. Food supplies should be separated and stored according to type and its required storage temperature. For example, powdered eggs or other similar merchandise that may be kept out of the refrigerator for a reasonable length of time should be stored in the coolest part of the storeroom. Bulk products that lump or cake, such as sugar and salt, should be stored in covered metal containers installed on a rack above the floor level in the driest part of the store room. If the covers become soiled or damaged, they should be thoroughly cleaned and repaired or replaced. Products that are subject to spoilage should be kept in the most available section of the storage space. Leaking cans or cans that have swollen ends (so-called "flippers") should be discarded as soon as they are noticed. Materials packaged in boxes, baskets, cartons, bags, or similar large containers should be stored on racks at least 12 in. above the floor so that the floor under them can be swept, and 18 in. away from all walls to be easily accessible. This also prevents the nesting of rats and mice beneath such materials. The moving of stocks every thirty days is another preventive of nesting by rodents. Small articles, such as canned goods, raisins, prunes, noodles, and so on, may be stored on shelves or in vermin-proof cabinets.

Every time stock is moved in or out of the basement, broken bags of material should be removed immediately. Doing it today instead of tomorrow constitutes good housekeeping. When a stock pile has been moved, the floor should be swept before bringing in new stock. An alert employee should be taught to look for possible pest infestation. At the first sight of roaches, flies, or other insects, he should notify his superior so that prompt steps may be taken to correct the condition.

Covered refuse containers should be provided in the basement.

There should be no exposed sewer lines which might leak on packaged food. If they cannot be eliminated, food should not be placed under them or they should be troughed.

Care should be exercised to see that products detrimental to health, such as rat poisons, insecticides, germicides, and cleaning compounds are segregated in the store room on shelves clearly marked "For Cleaning Preparations Only," and under no circumstances should such products ever be placed in discarded food containers. Sodium fluoride, if used, should be tinted to avoid any error in use with food.

Refrigeration

Most institutions do not have individual refrigerators that may be set at different temperatures for different foods. They must depend on one or more large refrigerators or a large walk-in cooler. This usually requires setting the thermostatic controls for one temperature for all purposes. If this is the case, it will usually be found upon testing with a thermometer that there are a few warmer shelves in the box where the temperature may go as high as 50°F. In general, it may be said that milk, meats, and "left-overs" should be stored in the coldest part of the refrigerator between 34° and 40°F. Eggs and vegetables may be kept in the warmer portions where temperatures are between 40° and 50°F. At these temperatures, bacterial spoilage will be at a minimum.

Under no circumstances should food be stored directly on refrigerator floors, but rather on racks.

Today many institutions are using special equipment for storing frozen foods and are purchasing frozen meats, fish, and vegetables. Freezing usually ruptures some of the cells in the food, making the product more readily available for invasion by bacterial organisms. Consequently, defrosted foods decompose more readily than fresh products. "Once defrosted never refrozen" is safe teaching for food handlers. It should also be remembered that pork fat becomes rancid upon lengthy storage and is unfit for human consumption. The practical length of storage for frozen pork in institutions is thirty to sixty days, for beef six months, and for poultry six months.

DISPOSAL OF WASTE

Garbage and rubbish should be immediately placed in tightly covered metal containers while waiting ultimate disposal. Such containers should be washed and sterilized each time they are emptied, and the entire outside of each one should be sprayed or painted with a residual type insecticide, such as 10 per cent DDT to aid in fly and insect control. In all institutions caring for patients with communicable diseases, patients' garbage should be collected in burnable containers, such as moisture-resistant paper bags. These should be disposed of by incineration. (The actual placement in the incinerator should be done by a trained member of the kitchen staff rather than untrained general labor.)

The practice of refrigerating garbage wherever possible is strongly recommended, as well as the installation of commercial disposal equipment in which garbage can be ground and discharged into the sewer, provided local regulations do not prohibit such disposal.

CARE OF DISHES AND UTENSILS

The care of dishes and utensils in an institution is of great importance. Diseases may be spread from one person to another by improperly sanitized dishes or the employees themselves may become ill as a result of improperly handling dishes from diseased persons.

Dishes and utensils should be free from chips and cracks and should be stored on clean shelves or in cupboards where they are protected from dust. In this connection, a word of caution on the making up of trays is in order. Trays should not be made up immediately following dishwashing unless the whole tray can be properly stored.

After use, of course, dishes should be thoroughly washed and sanitized by the methods recommended by the local health department.

If the local health department has not established recommended procedures for dishwashing, one of the following methods will give proper sanitation.

Hand Dishwashing

(a) Scrape food particles into a garbage can.
(b) Wash with a good detergent in clean water as hot as the hands will permit, but under no circumstances less than 110°F.
(c) Rinse in clean water.
(d) Sanitize by
    (1) Placing in a basket and completely immersing in hot water at 170°F. for 30 seconds, or
    (2) By rinsing for 30 seconds in a solution of a suitable chemical sanitizer.

After washing, dishes should air dry (a towel may become contaminated and pass on such contamination from dish to dish).

Machine Washing

If dishes are machine washed, a detergent should be used at a wash-water temperature of 140°F. and the dishes rinsed to sanitize with water at a temperature of 170°F. After all dishes have been washed, the dishwashing machine should be thoroughly cleaned.

Institutions handling patients with communicable disease should set up separate dishwashing facilities for the communicable disease division. One section should be designated as the clean area and the other as the contaminated area. Soiled dishes should be brought into the contaminated area and handled by special employees. The washed dishes should be handled by "clean" employees. The employees should be trained that those in the contaminated area should never leave that area without removing cover garments and washing their hands. "Clean" employees must never cross over into the contaminated area. Contaminated trucks should be thoroughly washed after each meal and treated with a residual type bactericide such as quarternary ammonium compounds. Employees in the contaminated section should be checked monthly by a physician and by X-rays taken several times a year. Also, a daily check-up by the supervisor or other competent person assigned for that purpose is desirable. This will serve not only to check infection, but will make the employees realize that they must take every precaution to protect themselves and others.

In small institutions handling only occasional infectious cases, such segregation of operations may not be practical. In those cases, plasticized paper, and single service silverware are recommended for it can be destroyed by incineration just as other contaminated material. Another alternative is for the silverware to be cleaned and sterilized under the supervision of the nurse or to have dishes and silverware issued in the room and sterilized by the nurse or the nurses' aid. After removal of unconsumed food, such sanitization can be accomplished by immersing in either a chlorine solution or a quaternary ammonium solution, then rinsing in clean running water. The dishes and utensils will then be ready to be returned to the kitchen for complete sanitization.

SANITARY CARE OF FOODS

The person charged with receiving foods should also be taught to sort out foods carefully as received, placing those needing quick consumption in the active storage areas.

Products made of coagulated mixtures of eggs and milk should be freshly made and should be kept refrigerated until served. If they cannot be made and served within 4 hr., they should not be used. Food poisoning bacteria thrive in this type of product without producing undesirable flavors, odors, or appearance.

In cooking foods to be served from the steam table, it is best to cook them in smaller quantities oftener, than to cook large quantities and let them stand for a long period of time. The safe policy to follow in serving food is: either keep it "cold" or keep it "hot," or don't keep it.

Good sanitation will be the result of educating employees to know the how, when, and why of food care and cleanliness.

Cholesterol in Coronary Thrombosis

The problem of defects of cholesterol metabolism in the initiation or aggravation of coronary atherosclerosis producing serious heart disease is at present unsolved. Much more investigation is required before one can give a full answer to several questions that deal with a patient who has had coronary heart trouble. The intrinsic production of cholesterol by any given person from any kind of food is perhaps more important than the actual amount of cholesterol in the food itself, although it is probable that an excess amount of cholesterol in the food may do harm in a candidate for coronary atherosclerosis. Also, the state of the coronary arterial walls and other factors not yet elucidated may play a role. It is well recognized now, for example, that it is the male, especially the muscular male, who is an early candidate. This brings up the matter of hormonal influences with respect both to cholesterol metabolism and to the cardiovascular system in general. Until more information on these problems is available, one cannot be dogmatic.

It would seem wise, however, to advise a patient who has had coronary heart disease to be temperate in all things, especially in diet. Since it is likely that the total calories ingested play an important role, the diet should be kept at a reasonable number of calories for that particular person's size and activity, to avoid any gain in weight or to lose weight if there is a surplus; he should eat sparingly of cholesterol-rich foods, which include liver, cream, butter, and eggs. Regular exercise in moderation, if it does not produce actual cardiac symptoms, is probably wise. Extra vitamins and drugs are, as far as is known, of relatively little importance (except for symptomatic treatment by nitrites). The use of visammin (khellin), iodide, thyroid, and choline is still in the experimental stage.—*From Queries and Minor Notes. J.A.M.A. 143: 1532 (August 26), 1950.*

Effect of Cooking Methods on Retention of Vitamins and Minerals in Vegetables[1]

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EVER since the discovery of fire, man has been concerned with methods of cooking foods. The primary function of cooking was for centuries solely to prepare foods in an edible form. Later, as a result of developments in the field of nutrition, it soon became evident that certain substances in foods, invisible and undetectable by the senses of taste and smell, are important for the prevention of certain deficiency diseases.

Since the problem of providing good nutrition looms large as one of the most important general public health problems, it is important for the nutritionist to evaluate the effect that methods of cooking have upon the retention of vitamins and minerals and how cooking procedures can be so modified as to retain these essential nutrients to the maximum without sacrifice of economy, palatability, and appearance.

It is generally recognized that cooking often destroys or leaches out of the food considerable quantities of vitamins and minerals before it reaches the consumer. Most food charts and tables that present data on the nutritive values of foods refer to the fresh, raw food and do not take into account losses as a result of cooking.

Although data on the nutritive value of raw and cooked foods have been accumulating (1–3), only little information (4, 5) is available on the retention of vitamins and minerals of common foods cooked in family-size quantities.

It was the purpose of the present study to evaluate further various cooking procedures in such quantities that the food concerned can best make its full and rightful contribution to health.

EXPERIMENTAL

Food Preparation

The foods selected for the study were: asparagus, beets, broccoli, cabbage, carrots, cauliflower, sweet corn (yellow), green beans, peas, potatoes, summer squash, and spinach. In all cases fresh, unwilted vegetables of the best quality obtainable were purchased in amounts that would permit a uniform sample for each cooking method tested.

All the vegetables were cleaned of all blemishes and washed with tap water followed by a thorough rinse with distilled water. In this experiment, new potatoes were used and were prepared by scrubbing with a stiff vegetable brush, as were beets and carrots. Corn was cooked on the cob, after which the kernels were cut off. Squash was peeled and diced prior to cooking, since the skin is not generally considered edible. With the above exceptions, the general methods of vegetable preparation accepted by best home economics practices and recommended for the "waterless" method of cooking (6) were followed. The cooking experiments were conducted on the same mornings that the vegetables were purchased to minimize losses of nutritive value due to prolonged standing.

Cooking Procedures

A uniform portion, i.e., 500 gm., of each vegetable was cooked by the following methods: (a) pressure cooked with 125 ml. (½ cup) water added; (b) with sufficient water added just to cover the vegetable; (c) with 125 ml. (½ cup) added water; (d) and with no added water, or the "waterless" method. These methods incorporate the chief means by which the housewife prepares vegetables. A regulation 4-qt. pressure cooker with a 15-lb. regulating gauge was used for all pressure cooking. Heavy sheet aluminum vessels[3] especially designed for the "new-improved" method of waterless cooking were used for the other methods, and the size of vessel selected was that which the vegetables would most nearly fill. The vessels were tightly covered during the duration of the cooking period for all methods except Method *b* (i.e., water added to cover), in which case the cover

[1] Supported by a grant from the Aluminum Cooking Utensil Company, New Kensington, Pennsylvania. Received for publication June 23, 1950.

[2] The authors wish to acknowledge the help of William R. Letsch, Leon A. Phillips, and Lucille Schuster, in conducting the cooking tests and carrying out the various analyses.

[3] New Method Wearever aluminum utensils, furnished by the Aluminum Cooking Utensil Company, New Kensington, Pennsylvania.

was left slightly ajar to permit the free escape of steam.

Rather than use a precise cooking time for Methods *b*, *c*, and *d*, each vegetable was cooked to a prescribed degree of doneness (just tender) as determined by puncture tests made at about the usual cooking time accepted by common usage. In the case of pressure cooked vegetables, the procedure followed was to close the vessel and place on high heat; as soon as the regulating gauge weight jiggled, the heat was reduced so as to keep the weight moving gently. The cooking times in minutes at 15 lb. pressure for the various vegetables were as follows: asparagus, 3; beets, 10; broccoli, 1.5; cabbage, 2; carrots, 3; cauliflower, 1.5; corn (on cob), 4; green beans, 2.5; peas, 0.5; potatoes, 13; squash, 3; and spinach, 1.

In the case of vegetables cooked with water to cover and with ½ cup added water, the vegetables were brought to a rapid boil at high heat after which they were maintained at a "gentle boil" with low heat. In all cases where water was added, i.e., Methods *a*, *b*, and *c*, distilled water was used. Vegetables cooked by the "waterless" method (no added water) were heated at medium heat, until the cover was hot to touch (about 5 min.), after which the heat was reduced to "very low" until the vegetables were done. No salt or other seasonings were used with any of the vegetables. A gas range[4] was used for the cooking experiments.

After cooking, the vegetables were drained and the volumes of liquid were recorded. The vegetables were then placed in sealed paper containers and stored at −12°C. for analyses as required.

Methods of Analyses

Preparation of Samples. Enough of each fresh vegetable was taken so that it could be divided into eight representative parts. Four separate 100-gm. portions were first blended into a smooth homogeneous mass in a Waring Blendor as follows: Portion *1* was blended with 100 gm. 95 per cent ethyl alcohol which contained 1 per cent potassium hydroxide and reserved for carotene analyses; Part *2* was homogenized in 100 gm. 0.1N sulphuric acid and used for riboflavin, niacin, and thiamine analyses; Portion *3* was blended with 100 gm. 1 per cent oxalic acid and held for ascorbic acid analyses; and Portion *4* was homogenized with 100 gm. distilled water and saved for ash, iron, phosphorus, calcium, and moisture determinations. These parts then represented the fresh, uncooked samples. The remaining four parts of 500 gm. each were then cooked by the methods described above, and after cooking and draining, each cooked vegetable was divided into four portions of 100 gm. each and prepared by blending in the same manner as for the fresh vegetables. All samples were stored in sealed paper containers in a frozen food chest at −12°C. until ready for analyses. There is no reason to believe that such a short period of storage prior to analysis results in a significant loss of vitamins.

Moisture. A modification of the method of the Association of Official Agricultural Chemists (7) was used in determining moisture. About 20 gm. (weighed exactly) of blended Portion *4* (see above) of each sample were placed in a tared, flat bottomed aluminum drying dish and dried in a 100°C. air oven overnight. The sample was then removed to a dessicator, cooled, weighed, and redried to a constant dry weight.

Ash. The ash content was measured by a modification of the method of the Association of Official Agricultural Chemists (7). A portion of the dried material was ground, redried if necessary, and 5-gm. portions weighed into a tared porcelain crucible and ashed in a muffle furnace at 500 to 600°C. For each sample, two ashings were made, one for calcium analyses and one to which alcoholic magnesium nitrate was added which was used for iron and phosphorus determinations.

Calcium. One of the ash samples described above was treated with concentrated hydrochloric acid to precipitate out the silica and then filtered. The residue was washed thoroughly and the filtrates made to appropriate volume, depending on the calcium content of the sample. Calcium was then determined on aliquots by the standard macro-calcium oxalate-permanganate titration method (7).

Iron. A modification of the method of the Association of Official Agricultural Chemists (7) was used to determine iron. The ash prepared for phosphorus and iron determinations was treated with concentrated hydrochloric acid and filtered into a 100-ml. volumetric flask and made to volume with distilled water. Aliquots of this solution were available for both phosphorus and iron determinations. The color development for iron with dipyridine was carried out directly in an Evelyn tube for convenience and read in the Evelyn colorimeter with a 510-m.u. filter.

Phosphorus. In analyzing for phosphorus, the method used was that of Fiske and Subbarow (8) modified so that an aliquot of the above solution could be pipetted directly into an Evelyn tube where the reaction was carried out and the color was read in an Evelyn colorimeter fitted with a 660-m.u. filter.

Thiamine. After conversion to thiochrome which was measured fluorimetrically, thiamine was determined. The fluorescence is proportioned to the thiochrome present and hence to the thiamine originally in the sample. The actual method used was that found in *Methods of Vitamin Assay* of the Association of Vitamin Chemists, Inc. (9).

Niacin and Riboflavin. Samples for niacin and riboflavin analysis were prepared simultaneously by

[4] Gas range supplied by the Roper Range Company, Rockford, Illinois.

TABLE 1

Retention of calcium, iron, and phosphorus in twelve vegetables cooked by four methods

VEGETABLE	METHOD OF COOKING	DRY WEIGHT	CALCIUM			IRON			PHOSPHORUS		
			As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention
		%	*mg./100 gm.*	*mg./100 gm.*	%	*mg./100 gm.*	*mg./100 gm.*	%	*mg./100 gm.*	*mg./100 gm.*	%
Asparagus	Fresh	7.6	23.9	315	100.0	0.92	12.1	100.0	58.3	767	100.0
	Pressure cooked	7.2	21.2	295	93.5	0.78	10.8	89.6	50.5	701	91.4
	Water to cover	5.4	15.0	278	88.4	0.51	9.5	78.7	29.1	539	70.3
	½ cup water	7.1	20.9	295	93.8	0.77	10.9	90.1	49.3	695	90.6
	Waterless	7.8	24.6	316	100.4	0.92	11.8	97.4	58.1	745	97.1
Beets	Fresh	12.0	32.1	268	100.0	1.13	9.42	100.0	37.9	316	100.0
	Pressure cooked	10.6	27.1	256	95.7	0.94	8.87	94.2	28.5	269	85.0
	Water to cover	9.3	20.9	225	84.0	0.75	8.11	86.1	22.1	238	75.3
	½ cup water	11.2	27.1	242	90.2	0.96	8.56	90.9	29.6	264	83.7
	Waterless	12.5	33.1	265	98.7	1.15	9.18	97.4	37.0	296	93.8
Broccoli	Fresh	11.3	153.0	1354	100.0	1.73	15.3	100.0	72.8	644	100.0
	Pressure cooked	10.7	135.0	1259	93.0	1.46	13.6	89.2	63.0	589	91.5
	Water to cover	7.1	80.3	1131	83.5	0.83	11.7	76.5	33.2	468	72.6
	½ cup water	9.3	111.0	1189	87.8	1.30	14.0	91.4	54.3	584	90.7
	Waterless	11.8	153.0	1300	96.0	1.73	14.7	96.1	74.1	628	97.5
Cabbage	Fresh	6.9	42.9	622	100.0	0.59	8.55	100.0	23.4	339	100.0
	Pressure cooked	5.9	33.5	568	91.3	0.45	7.63	89.2	18.1	307	90.5
	Water to cover	4.8	23.7	493	79.3	0.31	6.54	76.5	11.8	246	72.6
	½ cup water	5.8	31.7	546	87.8	0.47	8.05	94.1	17.8	307	90.7
	Waterless	7.2	43.0	597	96.0	0.59	8.22	96.1	23.3	324	95.7
Carrots	Fresh	11.8	41.3	350	100.0	0.98	8.31	100.0	34.5	292	100.0
	Pressure cooked	10.2	31.7	311	88.9	0.73	7.16	86.2	24.9	244	83.4
	Water to cover	8.4	23.6	281	80.3	0.58	6.86	82.6	19.6	233	79.8
	½ cup water	10.4	33.1	318	90.8	0.76	7.33	88.2	26.6	256	87.7
	Waterless	11.6	38.4	331	94.5	0.88	7.60	91.4	32.0	276	94.4
Cauliflower	Fresh	7.8	26.2	336	100.0	1.00	12.80	100.0	50.2	644	100.0
	Pressure cooked	7.4	21.9	296	88.1	0.77	10.40	81.5	40.4	546	84.8
	Water to cover	5.0	13.9	278	82.7	0.47	9.34	73.0	23.4	468	72.6
	½ cup water	7.3	21.2	290	86.4	0.77	10.50	82.2	38.4	526	81.7
	Waterless	8.2	25.4	310	92.2	0.93	11.30	88.4	49.3	601	93.4
Corn	Fresh	26.3	8.4	32.1	100.0	0.62	2.36	100.0	103.0	392	100.0
	Pressure cooked	24.3	6.6	27.0	84.1	0.45	1.87	79.5	75.1	309	78.8
	Water to cover	23.2	6.0	25.7	80.2	0.40	1.72	72.7	56.8	245	62.6
	½ cup water	23.9	6.9	28.8	89.8	0.49	2.04	86.4	71.5	299	76.4
	Waterless	26.8	7.9	29.4	91.5	0.58	2.15	90.9	91.9	343	87.5
Green beans	Fresh	10.2	73.9	725	100.0	1.21	11.9	100.0	42.0	412	100.0
	Pressure cooked	9.8	68.3	697	96.1	1.16	11.8	93.3	37.7	385	93.5
	Water to cover	7.0	44.9	641	88.4	0.71	10.2	85.8	21.3	304	73.7
	½ cup water	10.0	67.0	672	92.7	1.08	10.8	91.0	37.0	370	89.9
	Waterless	10.5	76.4	728	100.4	1.20	11.4	95.5	43.9	418	101.5
Peas	Fresh	23.3	23.2	99.6	100.0	2.02	8.67	100.0	118.0	506	100.0
	Pressure cooked	22.2	19.2	86.4	86.7	1.56	7.04	81.2	85.9	387	76.4
	Water to cover	19.7	15.5	78.6	78.9	1.34	6.82	78.7	72.3	367	72.6
	½ cup water	22.4	19.2	85.8	86.1	1.64	7.31	84.3	86.7	387	76.5
	Waterless	23.8	22.3	93.9	94.3	1.84	7.72	89.1	102.0	427	84.3
Potatoes	Fresh	22.9	14.1	61.6	100.0	0.85	3.71	100.0	52.0	227	100.0
	Pressure cooked	21.9	10.6	48.6	78.9	0.60	2.75	74.0	39.0	178	78.3
	Water to cover	19.4	6.7	34.6	56.1	0.44	2.29	61.6	31.0	160	70.6
	½ cup water	21.7	10.2	46.9	76.1	0.58	2.66	71.6	38.0	175	77.3
	Waterless	23.2	12.8	55.3	89.8	0.73	3.16	85.3	45.2	195	86.1

TABLE 1—*Continued*

VEGETABLE	METHOD OF COOKING	DRY WEIGHT	CALCIUM			IRON			PHOSPHORUS		
			As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention
		%	*mg./100 gm.*	*mg./100 gm.*	%	*mg./100 gm.*	*mg./100 gm.*	%	*mg./100 gm.*	*mg./100 gm.*	%
Squash	Fresh	4.6	33.1	720	100.0	0.64	13.90	100.0	33.0	717	100.0
	Pressure cooked	4.2	22.7	541	75.2	0.48	11.50	82.6	24.4	581	81.0
	Water to cover	4.0	16.7	418	58.1	0.39	9.73	70.0	21.5	537	74.9
	½ cup water	4.4	25.3	574	79.7	0.50	11.30	81.2	26.4	601	83.8
	Waterless	4.8	33.4	655	91.0	0.63	12.30	88.7	31.9	626	87.3
Spinach	Fresh	7.7	87.8	1140	100.0	3.04	39.5	100.0	45.3	588	100.0
	Pressure cooked	6.6	62.8	952	83.5	2.26	34.2	86.7	32.9	498	84.7
	Water to cover	5.3	44.4	838	73.5	1.63	30.8	78.0	20.9	395	67.2
	½ cup water	6.9	63.8	925	81.1	2.33	33.8	85.5	32.6	473	80.5
	Waterless	8.0	81.7	1008	88.4	2.85	35.2	89.0	42.6	526	89.5

taking aliquots of blended Portion *2* (see above) and autoclaving for 30 min. at 120°C. The samples were then neutralized to *p*H 7, divided in equal portions for niacin and riboflavin analyses, diluted to appropriate volumes, and assayed by microbiologic procedures. Niacin was determined by the method of Krehl *et al.* (10) using *L. arabinosus* as the test organism, and riboflavin was measured with *L. casei* using the medium of Krehl and Fruton (11).

Ascorbic Acid. This vitamin was determined by the method developed by the National Canners Association, Can Manufacturers Institute Nutrition Program (12) which depends upon the ability of reduced ascorbic acid to decolorize the dye 2,6-dichlorophenolindophenol. The extent of decolorization was measured using an Evelyn colorimeter with a 515-m.u. filter.

Carotene. Since vitamin A as such does not exist in vegetable materials, it was necessary to evaluate the amount of biologically active carotenoids present in the various vegetables. The solvent partition method (9) was selected for this purpose. It is based on the differential solubilities of fat-soluble pigments in immiscible solvents. The intensity of the color of the final carotene solution was measured in an Evelyn colorimeter with a 450-m.u. filter against a standard of pure β-carotene.

DISCUSSION OF RESULTS

The analytical data on the twelve vegetables studied in the fresh stage and after cooking are compiled in Tables 1 and 2. As can be seen from Table 1, the dry weight of the vegetables varied considerably as a result of the several cooking procedures. In general, the waterless method of cooking resulted in the highest percentage of dry weight, while cooking with water to cover gave the lowest dry weight. The other two methods studied led to intermediate and more variable results. Because of this variation in dry weight, it was necessary not only to present the values found "as assayed," but also to adjust all values to a dry weight basis in order to provide a uniform base line for comparison. For similar reasons, it was necessary to calculate per cent retention, not on the "as assayed" basis but on the dry weight basis. Such a procedure, therefore, allows for a uniform, fair, and direct evaluation of the mineral and vitamin content retained after cooking by various methods.

A consideration of Tables 1 and 2 reveals that, in general, the values obtained for the minerals and vitamins of the fresh vegetables fell within the range of "normal" values. One must realize, of course, that a considerable range of values is possible since factors such as season, soil condition, length of storage, and stage of maturity play vital roles in determining the vitamin content of vegetables. Because of these factors, it is difficult to say what the "normal" value really is; actually the "normal" values reported in the literature are a composite average of many values obtained from various laboratories on vegetables obtained under quite variable conditions.

A further consideration of Tables 1 and 2 confirms what has long been suspected, namely that the evaluation of the nutritive quality of a diet on the basis of data obtained on fresh vegetables alone is subject to considerable error on the positive side. It should be further noted that the values obtained were for family-size portions, prepared under optimum conditions, so that any tendency to use improper techniques, such as over cooking or using baking soda to improve color, would greatly exaggerate losses.

Although the percentage retention by any one cooking method showed considerable variation among the twelve vegetables, it was deemed desirable to assemble the data from Tables 1 and 2 as the average per cent retention of all twelve vegetables cooked by the four different methods. These averages are, therefore, presented in Table 3 and allow for a more general examination of the results.

Certain general conclusions may be drawn from the data in Table 3. It is apparent that the greatest

TABLE 2

Retention of vitamins in twelve vegetables cooked by four methods

VEGETABLE	METHOD OF COOKING	THIAMINE			RIBOFLAVIN			NIACIN			ASCORBIC ACID			CAROTENE		
		As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention
		mg./100 gm.	mg./100 gm.	%	mg./100 gm.	mg./100 gm.	%	mg./100 gm.	mg./100 gm.	%	mg./100 gm.	mg./100 gm.	%	mg./100 gm.	mg./100 gm.	%
Asparagus	Fresh	0.120	1.58	100.0	0.170	2.24	100.0	1.18	15.5	100.0	36.0	474	100.0	0.490	6.45	100.0
	Pressure cooked	0.091	1.27	80.1	0.118	1.64	73.0	0.97	13.5	86.9	23.0	320	67.6	0.364	5.06	78.5
	Water to cover	0.046	0.86	54.1	0.073	1.36	60.8	0.50	9.18	59.2	10.9	201	42.5	0.225	4.17	64.6
	½ cup water	0.088	1.24	78.4	0.099	1.40	62.4	0.91	12.8	82.8	22.4	315	66.4	0.422	5.95	92.3
	Waterless	0.111	1.43	90.2	0.135	1.73	77.4	1.08	13.8	89.3	25.7	329	69.4	0.511	6.55	101.5
Beets	Fresh	0.034	0.28	100.0	0.043	0.36	100.0	0.360	3.00	100.0	5.5	45.8	100.0	0.011	0.92	100.0
	Pressure cooked	0.023	0.22	79.8	0.033	0.31	87.2	0.285	2.69	89.7	4.6	43.0	93.8	0.008	0.75	81.4
	Water to cover	0.016	0.17	62.3	0.023	0.25	70.4	0.197	2.12	70.7	3.2	33.9	74.0	0.006	0.67	72.4
	½ cup water	0.022	0.20	70.4	0.035	0.31	85.1	0.284	2.54	84.6	4.5	40.0	87.3	0.009	0.76	82.8
	Waterless	0.033	0.26	91.4	0.041	0.33	92.1	0.361	2.89	96.3	4.6	37.1	81.1	0.011	0.89	96.2
Broccoli	Fresh	0.079	0.70	100.0	0.180	1.59	100.0	0.790	6.99	100.0	94.8	839	100.0	0.280	2.48	100.0
	Pressure cooked	0.061	0.57	81.2	0.151	1.41	88.8	0.547	5.12	73.2	61.1	571	68.0	0.235	2.20	88.6
	Water to cover	0.035	0.49	70.1	0.075	1.06	66.4	0.226	3.19	45.7	30.2	425	50.6	0.133	1.88	76.0
	½ cup water	0.048	0.52	74.6	0.114	1.23	77.2	0.561	6.03	86.3	53.6	576	68.7	0.194	2.09	84.3
	Waterless	0.078	0.66	94.5	0.156	1.32	83.1	0.776	6.58	94.1	69.5	589	70.2	0.286	2.42	97.7
Cabbage	Fresh	0.062	0.90	100.0	0.057	0.83	100.0	0.260	3.77	100.0	52.4	759	100.0	0.057	0.83	100.0
	Pressure cooked	0.037	0.62	69.1	0.041	0.70	84.9	0.166	2.82	74.9	34.7	588	77.5	0.047	0.80	96.8
	Water to cover	0.027	0.56	62.4	0.019	0.40	48.3	0.087	1.82	48.3	16.1	336	44.3	0.029	0.61	73.3
	½ cup water	0.037	0.63	70.2	0.034	0.58	70.4	0.154	2.65	70.4	25.3	436	57.4	0.043	0.74	89.7
	Waterless	0.058	0.80	89.2	0.050	0.70	84.1	0.234	3.25	86.1	37.4	519	68.4	0.057	0.79	95.6
Carrots	Fresh	0.130	1.10	100.0	0.059	0.50	100.0	0.640	5.42	100.0	4.1	34.7	100.0	2.88	24.4	100.0
	Pressure cooked	0.097	0.95	86.6	0.046	0.45	89.8	0.500	4.90	90.4	2.8	27.4	79.1	2.20	21.6	88.4
	Water to cover	0.066	0.78	70.6	0.031	0.37	74.7	0.333	3.97	73.3	1.8	21.9	63.1	1.73	20.6	84.5
	½ cup water	0.096	0.92	83.9	0.044	0.42	84.2	0.504	4.85	89.5	2.7	26.1	75.1	2.19	21.1	86.3
	Waterless	0.119	1.03	93.5	0.056	0.48	96.7	0.617	5.32	98.1	2.9	25.2	72.5	2.80	24.1	98.9
Cauliflower	Fresh	0.092	1.18	100.0	0.114	1.46	100.0	0.530	6.79	100.0	68.0	872	100.0	0.027	0.35	100.0
	Pressure cooked	0.065	0.88	74.6	0.083	1.12	76.9	0.386	5.22	76.9	48.7	658	75.5	0.023	0.31	89.8
	Water to cover	0.031	0.61	51.4	0.046	0.89	60.8	0.207	4.13	60.8	20.6	412	47.3	0.014	0.28	80.7
	½ cup water	0.061	0.83	70.2	0.081	1.11	76.2	0.377	5.17	76.2	34.4	471	54.0	0.021	0.29	83.7
	Waterless	0.084	1.03	87.4	0.102	1.24	84.9	0.498	6.07	89.4	50.6	617	70.7	0.028	0.34	97.4
Corn	Fresh	0.110	0.42	100.0	0.110	0.42	100.0	1.72	6.54	100.0	10.8	41.1	100.0	0.250	0.95	100.0
	Pressure cooked	0.083	0.34	80.2	0.080	0.33	79.6	1.23	5.08	77.7	7.5	30.8	74.9	0.204	0.84	88.2
	Water to cover	0.070	0.30	71.9	0.049	0.21	50.9	0.77	3.33	50.9	5.7	24.7	60.2	0.190	0.82	86.4
	½ cup water	0.081	0.34	81.4	0.086	0.36	84.7	1.32	5.54	84.7	6.4	26.8	65.1	0.198	0.83	87.3
	Waterless	0.104	0.39	92.3	0.102	0.38	89.5	1.57	5.85	89.5	7.6	28.6	69.6	0.236	0.88	93.1
Green beans	Fresh	0.062	0.61	100.0	0.120	1.18	100.0	0.660	6.47	100.0	12.80	126.0	100.0	0.440	4.31	100.0
	Pressure cooked	0.043	0.44	71.8	0.106	1.08	91.6	0.581	5.93	91.6	9.40	95.9	76.1	0.399	4.07	94.4
	Water to cover	0.028	0.40	66.2	0.054	0.77	65.6	0.297	4.24	65.6	5.20	73.7	58.5	0.258	3.69	85.6
	½ cup water	0.043	0.43	70.4	0.093	0.93	79.2	0.512	5.12	79.2	8.06	80.6	64.0	0.389	3.89	90.3
	Waterless	0.059	0.56	92.4	0.106	1.01	85.8	0.610	5.81	89.8	9.90	94.2	74.8	0.436	4.15	96.3
Peas	Fresh	0.290	1.25	100.0	0.180	0.77	100.0	1.92	8.24	100.0	26.6	114.0	100.0	0.380	1.63	100.0
	Pressure cooked	0.224	1.01	80.7	0.140	0.63	82.4	1.68	7.56	91.8	18.6	84.0	73.7	0.324	1.46	89.7
	Water to cover	0.147	0.75	59.7	0.112	0.57	74.2	1.09	5.55	67.3	11.5	58.5	51.3	0.268	1.36	83.2
	½ cup water	0.220	0.98	78.4	0.152	0.68	88.9	1.50	6.70	81.3	17.9	79.8	70.0	0.327	1.46	89.4
	Waterless	0.280	1.18	94.3	0.174	0.73	94.3	1.85	7.77	94.3	21.4	89.8	78.8	0.355	1.49	91.2

TABLE 2—*Continued*

VEGETABLE	METHOD OF COOKING	THIAMINE			RIBOFLAVIN			NIACIN			ASCORBIC ACID			CAROTENE		
		As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention	As assayed	Dry weight	Retention
		mg./ 100 gm.	*mg./ 100 gm.*	%	*mg./ 100 gm.*	*mg./ 100 gm.*	%	*mg./ 100 gm.*	*mg./ 100 gm.*	%	*mg./ 100 gm.*	*mg./ 100 gm.*	%	*mg./ 100 gm.*	*mg./ 100 gm.*	%
Potatoes	Fresh	0.097	0.42	100.0	0.040	0.17	100.0	0.980	4.28	100.0	23.20	101.0	100.0	0.024	0.11	100.0
	Pressure cooked	0.077	0.35	84.2	0.031	0.14	81.8	0.724	3.31	77.4	12.70	57.9	57.3	0.015	0.69	86.3
	Water to cover	0.058	0.30	72.1	0.021	0.11	64.6	0.535	2.76	64.6	8.03	41.4	41.0	0.017	0.87	78.9
	½ cup water	0.074	0.34	80.0	0.028	0.13	79.2	0.697	3.21	75.1	10.60	48.9	48.4	0.019	0.89	80.5
	Waterless	0.088	0.38	91.2	0.037	0.16	91.7	0.907	3.91	91.4	18.60	80.2	79.4	0.022	0.94	85.8
Squash	Fresh	0.039	0.85	100.0	0.050	0.11	100.0	0.610	13.30	100.0	13.10	285	100.0	1.96	42.6	100.0
	Pressure cooked	0.029	0.69	81.7	0.038	0.09	80.7	0.441	10.50	79.1	7.80	186	65.3	1.65	39.3	92.3
	Water to cover	0.020	0.51	60.3	0.028	0.07	63.6	0.339	8.47	63.7	5.76	144	50.5	1.40	35.1	82.4
	½ cup water	0.029	0.67	78.6	0.040	0.09	81.0	0.466	10.60	79.4	8.36	190	66.5	1.58	35.9	84.2
	Waterless	0.038	0.75	88.4	0.048	0.10	90.2	0.571	11.90	89.2	10.20	213	74.8	1.88	39.1	91.9
Spinach	Fresh	0.094	1.22	100.0	0.220	2.86	100.0	0.580	7.53	100.0	42.0	545	100.0	2.46	31.9	100.0
	Pressure cooked	0.062	0.94	76.9	0.141	2.13	74.6	0.345	5.24	69.6	22.2	336	61.7	1.99	30.2	94.8
	Water to cover	0.032	0.61	50.1	0.086	1.62	56.7	0.162	3.05	40.5	14.2	268	49.1	1.36	25.7	80.7
	½ cup water	0.059	0.86	70.4	0.141	2.04	71.4	0.399	5.78	76.8	19.5	282	51.7	1.92	27.8	87.2
	Waterless	0.086	1.06	87.2	0.196	2.45	85.5	0.533	6.66	88.4	30.6	382	70.0	2.33	29.1	91.3

losses of both minerals and vitamins occurred as a result of cooking by the "old-fashioned" method of water to cover and that the greatest overall retention and smallest loss resulted when vegetables were prepared by the "new method," the waterless way. Although no attempt was made to evaluate such factors as palatability and appearance, it seems safe to state on the basis of others' experience that the "waterlogged taste" and look of vegetables cooked with water to cover leave much to be desired.

Vegetables cooked with a little water, i.e., ½ cup (125 ml.), or in the more rapid pressure cooker with ½ cup water showed quite similar losses which were for the most part intermediate between the other two cooking methods. In the case of ascorbic acid and carotene, the pressure cooker method resulted in retentions approximating the waterless method. This may have been due to the much shorter cooking time which allows for less possibility of losses due to oxidation in the case of these two vitamins.

Of all the vitamins studied, losses of ascorbic acid were the most significant by all methods of cooking, although again greatest losses resulted from cooking with added water.

What are the factors which most govern the loss of vitamins and minerals as a result of cooking? The two most important factors are the leaching effect of the cooking water and the influence of oxidation. As a result of the present study, it must be concluded that the leaching out of vitamins and minerals is the most serious source of loss. This conclusion is supported by the following facts. First, the analyses of the drained liquid from the twelve vegetables for ascorbic acid, the one factor most sensitive to oxidation, showed that the major portion of the loss of ascorbic acid was accounted for in this drained liquid. This was particularly true when the oxidized form of the vitamin, which is still biologically active, was included in the determination. Second, if one examines the retention figures for niacin, a very stable compound which is not easily oxidized or destroyed, it is evident that the essential factor influencing loss was the leaching action of cooking water. Further evidence that oxidation plays but a minor role in the losses in the cooking methods employed is indicated by the fact that carotene, which is very sensitive to oxidation and relatively insoluble in water, was retained to a greater degree than the other vitamins studied.

As might be anticipated, minerals were also lost to a greater degree when the vegetables were cooked in water, than by the waterless method. In general, retention of minerals was better than of vitamins.

SUMMARY

Twelve different vegetables representative of those used by the average homemaker were first assayed on the fresh basis for calcium, iron, phosphorus, thiamine, riboflavin, niacin, ascorbic acid, and carotene. The various vegetables were then cooked in family-size amounts by four different cooking methods which included (a) pressure cooked with ½ cup added water, (b) cooked with water to cover, (c) cooked with ½ cup water, and (d) cooked with no added water, i.e., by the "waterless" method. After cooking, the vegetables were drained of their liquid

TABLE 3

Average retention of vitamins and minerals in twelve vegetables after cooking

METHOD OF COOKING	AVERAGE RETENTION OF TWELVE VEGETABLES							
	Calcium	Iron	Phosphorus	Thiamine	Riboflavin	Niacin	Ascorbic acid	Carotene
	%	%	%	%	%	%	%	%
Pressure cooked	87.9	85.6	84.9	78.9	82.6	81.6	72.5	89.1
Water to cover	77.8	76.7	72.1	62.6	63.1	59.2	52.7	79.1
½ cup water	87.9	86.4	84.1	75.6	78.3	80.5	64.5	86.5
Waterless	94.4	90.4	92.3	91.0	87.9	91.3	73.3	94.7

and assayed for the above listed minerals and vitamins. The results of the analyses were converted to the dry weight basis and the percentage retentions calculated. The data obtained clearly shows that the greatest retention of both minerals and vitamins was obtained when vegetables were cooked without added water, while the least retention was found when water to cover was used. Vegetables cooked in the pressure cooker or in a covered pan with ½ cup water occupied an intermediate position with respect to losses.

It must be concluded that vegetables cooked without added water retain their natural nutritive value best because losses of minerals and vitamins due to leaching, which is the greatest source of loss, are held to a minimum.

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A.D.A. Program for A.A.A.S. Meeting in Cleveland

On December 29, at the Hotel Statler, Cleveland, the American Dietetic Association will sponsor a Dietetic Section program at the annual meeting of the American Association for the Advancement of Science. Dr. Helen A. Hunscher, who has served as chairman of the committee which planned the program, will preside. Time of the meeting will be 8 p.m. The papers to be presented will be as follows:

"The Relation of Nutrition to the Development and Course of Tuberculosis in Adolescent Girls" by Joseph A. Johnston, M.D., Director of Pediatrics, Henry Ford Hospital, Detroit

"Rehabilitation of Children Through Better Nutrition" by Pauline Beery Mack, Ph.D., Director, Ellen H. Richards Institute, The Pennsylvania State College

Nutritional Status Survey, Groton Township, New York

IV. Consumption of Food Groups[1]

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CERTAIN dietary aspects of a nutritional status survey conducted in Central New York State in the fall of 1948 and the spring of 1949 have been presented in previous articles in this series (1–3). In one paper was discussed the relative adequacy of family and individual dietaries (2); in another (3), the relationship of nutrient availability to various socio-economic factors and the contribution of home-produced foods to the family dietaries was pointed out.

It is the purpose of this paper to show the per person-equivalent consumption of the food groups. The relationship of the usage of food groups to the following socio-economic factors will be discussed briefly: season and type of residence, weekly income, money value of food per meal, family size, education of the wife of the household, and dollar-value of home-produced food. In addition, the distribution of the food dollar over the various food groups will be presented and related to family size and income. The contribution of various food groups to the nutritive value of the diet as a whole will also be given. Finally, a comparison will be made between the average consumption of this community with that of four cities in 1948 as reported by the Bureau of Human Nutrition and Home Economics.

METHOD

Analyses of 221 family food records in the fall and 173 in the spring were made by a method previously described (2). The foods used by each family were divided into the twelve major food groups set up by the Bureau of Human Nutrition and Home Economics (4). Each family was converted into household size in terms of person-equivalents on the basis of total meals served, including those served to boarders, guests, and others as well as members of the family. The total number of meals was divided by 21 to give the person-equivalents, i.e., 21 meals = 1 person-equivalent. The total amount of each of the food groups used by the family was divided by the person-equivalents for that family. The consumption figures include all food brought into the house and used during the study week: purchased food, home-produced food, and food received as gifts. No allowances were made for waste.

RESULTS

Observations have been made on the relationship of a series of factors to the average usage of the various food groups by farm, rural non-farm, and village families and by all of the families in the study. Only the more pertinent findings will be presented.

Type of Residence and Season

The consumption of food groups per person-equivalent as related to type of residence and season is shown in Table 1. Previous examination of the average nutrients available daily per nutrition unit for each of the residence categories has shown that the village families were in the least favorable position in respect to meeting the National Research Council's Recommended Dietary Allowances (2). The rural non-farm group assumed a more favorable position, while the farm families had the best diets in terms of average nutrient availability. These same findings are reflected in the amounts of foods used in each of the residence types.

Farm families, who produce much of their own food, tended to use more of the so-called protective foods: milk, meats, eggs, and fruits and vegetables. There was one exception; they used less citrus fruits and tomatoes. When this food group was examined for use of tomatoes and citrus fruits separately, it was found that in the fall farm families used more tomatoes than any of the other residence groups. Their use of citrus fruits, however, was only two-thirds as much as the next highest residence type.

A previous report showed that vitamin A was the only nutrient in which appreciable seasonal differences were apparent. Substantially larger amounts were available in the fall than in the spring (2). Figures for the consumption of green leafy and yellow

[1] Received for publication June 26, 1950.

vegetables by each residential group were in line with this observation. An additional seasonal effect was apparent in the lowered consumption of other fruits and vegetables in the spring period. The use of the citrus fruit and tomato group in the spring equalled or exceeded that in the fall. It is interesting to note that in every residential category egg consumption increased somewhat in the spring. The spring week of record-keeping was in the period when eggs are usually at the lowest cost level of the year.

Adequacy

It seemed useful to compare the usage of the food groups in this study with some standard. There are many different patterns of diet which might be used to check adequacy. Since the United States Department of Agriculture publication "Helping Families Plan Food Budgets" (5) was published at approximately the time of the current study, it seemed to furnish an appropriate source of reference. Arbitrarily, it was decided to use the quantities recommended on the low-cost plan for a sedentary man as the basis of comparison. Only certain protective food groups were checked. Although the average intakes came close to meeting this plan, the distribution figures emphasize the great differences in consumption by individual families. Actually some 53 per cent of the families had less than the 5.0 qt. milk recommended per person per week. The average consumption in the fall of green leafy and yellow vegetables was 2.2 lb., which is the same as the recommended quantity, yet 63 per cent of the families used less than this amount. Fifty-five per cent had less than the recommended 2.0 lb. citrus fruits and tomatoes. The range of use for meat, fish, and poultry was 0.0 to 7.9 lb. per week; 28 per cent of the families used less than the recommended 2.0 lb. per week. Thirty-four per cent had less than five eggs per person per week.

It is interesting to compare the money value of the foods used by three types of families with the expenditures which the publication suggests would be required for the low-cost plan. The types of families on whom comparisons were made were the two-, four-, and six-person families used for illustrative purposes in the publication (5). The average expenditures for foods by the different types of families were equal to or greater than those needed to buy the foods suggested in the low-cost plan. There were some families who spent less than these amounts; however, the percentage of families who failed to buy the recommended quantities of food was considerably greater than the percentage who failed to spend sufficient money to meet the low-cost plan.

Families who spent below the amount suggested for the low-cost plan did not spend the proposed percentage of their income for food. This was true of families of each of the three sizes studied. Thus, in some cases families needed to spend a higher percentage of their income for food; however, with others, it was a case of spending more wisely. Since some families tended to spend enough to meet the food plan yet failed to use the quantities recommended for the plan, the need for nutrition education was evident. Whether housewives did not buy adequately because they lacked money-managing ability, knowledge, or interest is uncertain. Probably it was a combination of all three.

Income

As weekly income per food expenditure unit increased, the citrus fruits and tomato food group showed the greatest rate of increase in consumption per person-equivalent. Also, there was an increased

TABLE 1

Average consumption per person-equivalent of the food groups as related to season and type of residence

SEASON AND TYPE OF RESIDENCE	NUMBER OF FAMILIES	AVERAGE HOUSEHOLD SIZE	MILK EQUIVALENTS	POTATOES AND SWEET POTATOES	NUTS AND LEGUMES	GREEN LEAFY AND YELLOW VEGETABLES	CITRUS FRUITS AND TOMATOES	OTHER FRUITS AND VEGETABLES	MEAT, FISH, AND POULTRY	EGGS	FLOUR EQUIVALENTS	FATS AND OILS	SUGARS AND SWEETS	MISCELLANEOUS
		person equivalents	*qt.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*doz.*	*lb.*	*lb.*	*lb.*	*lb.*
Farm														
Fall	46	4.22	6.24	4.71	0.22	2.50	1.91	4.49	3.04	0.54	2.99	0.99	1.20	0.28
Spring	35	4.28	5.63	3.78	0.20	1.53	1.93	3.08	2.72	0.69	3.04	1.00	1.23	0.32
Rural non-farm														
Fall	73	3.44	4.62	3.94	0.29	2.35	2.11	4.22	2.48	0.50	3.16	1.09	1.34	0.47
Spring	59	3.54	4.87	3.87	0.22	1.66	2.49	3.26	2.47	0.60	2.94	1.04	1.32	0.52
Village														
Fall	102	3.44	4.59	3.22	0.19	1.99	2.31	3.39	2.66	0.43	2.21	0.81	0.99	0.61
Spring	79	3.45	4.53	2.70	0.16	1.58	2.61	2.64	2.68	0.48	2.19	1.02	1.15	0.72
Total														
Fall	221	3.60	4.94	3.77	0.23	2.21	2.16	3.90	2.68	0.48	2.68	0.94	1.15	0.49
Spring	173	3.65	4.87	3.32	0.19	1.60	2.43	2.94	2.62	0.56	2.62	1.02	1.22	0.57

consumption of meats, fruits and vegetables, and eggs with increased income. In the spring, when eggs are cheaper, the change in usage of this group with income was less marked.

Average Money Value of Food per Meal

The average money value of food per food expenditure unit meal was calculated for the families by the method described in "Family Food Consumption and Dietary Levels" (4). As the money value per meal increased, the average usage of each of the food groups, except dried beans, peas, and nuts, increased.

The rate of increase in usage which accompanied rise in meal value was greatest for meat and eggs. Families in which meals were valued at less than 30 cents used 1.9 lb. meat per person per week while families where meals were valued at 50 cents or over used 5.7 lb. per person. When the meal value increased from less than 30 cents to 50 cents and over, the use of eggs and miscellaneous foods tripled. With meals valued at 50 cents or over, two and one-half times more citrus fruits and tomatoes were used, twice as much other fruits and vegetables, almost two times more potatoes and green leafy and yellow vegetables, and one and one-half times more milk than with meals valued less than 30 cents.

Since dietary records are often evaluated by the presence or absence of foods in a food pattern as well as by calculation of the nutrients, it was decided to look at the adequacy of the average available nutrients per nutrition unit per day and to compare this with adequacy as judged by the food group usage. One money value level for meals was selected, and to judge the adequacy of the food group usage, it was decided to use as a standard the amounts recommended for a sedentary man on the low-cost plan (5). The sedentary man was selected because there is no way of weighting the recommended usage in such a manner as to be comparable with the nutrition unit; the suggested usage for sedentary man is intermediate between the high and low values for all ages and sexes.

The average nutrients available per nutrition unit per day for the 89 families whose meals were valued less than 30 cents were compared with National Research Council Recommended Dietary Allowances (6) for the physically active man. It was found that the average of the meals valued at this level met the recommended allowances in all nutrients except calcium and calories. The average usage of food groups, however, failed to meet the low-cost plan for the sedentary man in milk, green leafy and yellow vegetables, citrus fruits and tomatoes, grain products, and eggs, but exceeded the amount suggested for other fruits and vegetables.

This type of comparison may not be justified, but it shows the same thing which is found repeatedly when diets calculated by food groups are checked against those calculated for nutrients. Many diets which fail to meet an arbitrarily chosen pattern still prove to be adequate when calculated to specific nutrients. The appropriateness of the method used for evaluating adequacy of a diet is dependent upon the use intended for the results and upon the accuracy of the data. Checking dietaries by food group patterns offers information which can be used for educational purposes. If the data has been accurately collected, they can be calculated by nutrients and may be useful as a supplement for physical and biochemical findings.

Family Size

Examination of the fall records shows that as family size increased from below 2.0 food expenditure units to 4.0 and over, the usage of green leafy and yellow vegetables, citrus fruits, meat, and other fruits and vegetables decreased by about one-third. Also, there was a decrease in other food groups: grains by one-fourth and eggs by about one-fifth. The consumption of milk remained about the same and the consumption of potatoes was about 14 per cent greater. The general picture was the same in fall and spring except that in the spring, when eggs are cheaper, instead of a decrease we found a 16 per cent increase in usage while the amount of potatoes used remained the same.

It is interesting to note that for families from all categories the amount of milk per person did remain the same with increase in family size. The importance of this food to the family diet seems to be well recognized.

Formal Education of the Wife

At a first glance it appeared that the consumption of the food groups was related to the amount of formal education of the housewife. However, as the wife's education increased, the income and the average money value of food per meal increased. We have seen that there was increased usage of certain food groups with increase in income and with increase in money value of meals. Consequently, the apparent change in food group consumption was probably more directly related to these influences and only indirectly to education of the wife.

Dollar Value of Home-Produced Food

In general, increased dollar-value of home-produced food per food expenditure unit was accompanied by increased usage for all residential categories of the things produced at home, such as milk, eggs, potatoes, other fruits and vegetables, and to some extent, meat and fats. There was also some increased use of grains and sweets. In farm families alone, where much more food was home-produced, as the dollar-value of home-produced food increased, there was a marked increase in the use of milk, green leafy and yellow vegetables, citrus fruits and tomatoes, meat, eggs, and fats per person-equivalent,

although there was actually a decrease in average family income.

Division of the Food Dollar over the Food Groups

In Table 2 are presented the average amount per person-equivalent spent for food at home, the average family size, and the per cent distribution of the food dollar over the food groups for fall and spring. These families spent about one-sixth of their food dollar for milk; one-third for meat and eggs; about one-fifth for fruits and vegetables; one-tenth for grain products; and one-tenth for fats and oils and sweets combined. In general, as family size increased, a larger proportion of the food dollar was spent for milk and perhaps slightly less for meat and eggs. However, the spending patterns of various family sizes were very similar.

As incomes rose, slightly less of the food dollar was spent for milk, potatoes, dried beans and peas, grain products, and slightly more was spent for fruits and vegetables, meats, and eggs.

Contribution of the Food Groups to the Nutritive Value of the Diet

The contribution of the food groups to the nutritive value of the diet is presented in Table 3. Milk and dairy products contributed 69 per cent of the total calcium, almost one-half of the total riboflavin, and over one-fourth of the protein to the average nutrients available daily per nutrition unit. Fruits and vegetables, including sweet potatoes, contributed about two-thirds of the vitamin A value; butter and margarine furnished 10 per cent; milk products 15 per cent, and eggs about 5 per cent.

TABLE 2

Division of the food dollar according to food groups

FOOD GROUP	PERCENTAGE OF FOOD EXPENDITURE	
	Fall	Spring
Milk equivalents	17.4	16.5
Potatoes and sweet potatoes	2.9	2.8
Dried beans, peas, and nuts	1.1	1.0
Green leafy and yellow vegetables	4.1	4.9
Citrus fruits and tomatoes	3.6	5.0
Other fruits and vegetables	9.4	9.7
Meat, fish, and poultry	28.2	26.7
Eggs	5.7	5.8
Grain products	11.4	10.9
Fats and oils	8.2	7.4
Sugars and sweets	2.9	3.2
Miscellaneous	5.1	6.1
Number of families	208	166
Household size in person-equivalents	3.60	3.65
Average amount spent per week per person-equivalent	$6.32	$6.11

Citrus fruits and tomatoes contributed only 29 per cent of the total ascorbic acid, with other fruits and vegetables and potatoes furnishing approximately 60 per cent. The ascorbic acid values for vegetables and potatoes, however, did not allow for cooking losses.

Meat, fish, and poultry proved to be the best source of niacin and provided 37 per cent of the total. This group also furnished 28 per cent of the protein, 24 per cent of the iron, and 22 per cent of the thiamine.

TABLE 3

*Contribution of food groups to nutritive value of diet**

FOOD GROUP	AVERAGE CONTRIBUTION TO NUTRITIVE VALUE OF DIET								
	Calories	Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic acid
	%	%	%	%	%	%	%	%	%
Milk equivalents	16.1	26.9	68.6	3.5	14.6	12.2	47.5	4.0	6.9
Potatoes and sweet potatoes	6.2	4.6	2.4	9.1	7.0	12.1	3.9	12.8	29.4
Dry beans, peas, and nuts	1.4	2.2	1.1	3.6	0.4	1.8	0.9	3.3	0.5
Green leafy and yellow vegetables	1.7	2.4	3.6	6.9	40.5	4.7	4.0	3.6	19.0
Citrus fruits and tomatoes	1.8	1.2	2.4	3.5	7.4	4.0	1.6	2.8	29.3
Other fruits and vegetables	5.6	2.0	3.1	7.4	7.2	5.0	3.5	4.8	13.0
Meat, fish, and poultry	14.2	27.9	2.1	23.9	4.2	21.8	13.9	36.8	0.9
Eggs	2.2	6.1	2.2	6.9	5.8	2.9	6.4	0.3	0
Grain (flour equivalents)	25.7	23.6	11.9	31.0	1.4	32.7	16.5	28.9	0
Fats and oils	14.5	1.3	0.6	1.2	10.9	2.2	0.6	1.3	0
Sugars and sweets	8.9	0.2	1.5	2.1	0	0.2	0.4	0.4	0.3
Miscellaneous	1.7	1.6	0.5	0.9	0.6	0.4	0.8	1.0	0.7
Average available nutrients	3,292	94.0 gm.	1,020 mg.	16.4 mg.	10,445 I.U.	2.07 mg.	2.44 mg.	20.8 mg.	131 mg.

* Percentages are based on the total number of households.

Grain products furnished approximately one-fourth of the total calories; fats and oils and sugars and sweets provided another fourth of the total energy value.

Grain products furnished almost one-fourth of the total protein content of the diets.

Farm families received a greater percentage of their protein from milk than village families, who got more of their protein from meat.

Citrus fruits and tomatoes furnished more ascorbic acid in village family diets, while rural families received relatively more ascorbic acid from potatoes.

The grain products are a more important source of protein, iron, and the B-vitamins for the lower income rural non-farm families than for village and farm dietaries.

Comparison of the Average Consumption of the Food Groups with Those in Four Cities

Comparison of the average consumption of the food groups by the families of this rural community in the late fall with those of four large cities studied in the winter of 1948 by the Bureau of Human Nutrition and Home Economics (7) is presented in Table 4. The Bureau reports consumption figures determined by the food list method, and it has attempted to subtract waste other than cooking losses.

If the food groups usage of Groton is compared with that of three northern cities, one finds that families of the rural Groton community used less milk, meat, eggs, citrus fruits and tomatoes, and sweets but more potatoes than the northern cities. The usage of other fruits and vegetables, flour, and fats and oils was similar.

SUMMARY

Per capita use of the food groups in a rural community for 221 families in the fall and 173 families in the spring is presented. The use of the food groups is related to various socio-economic factors. Of the residential groups, farm families used more of the so-called protective food groups per person per week except citrus fruits and tomatoes. Home-produced foods contributed significantly to this greater usage.

A seasonal difference was apparent only for the usage of green leafy and yellow vegetables and other fruits and vegetables. Substantially larger amounts were available in the fall.

Family diets were checked for adequacy by using recommended amounts of the food groups in an arbitrarily selected pattern. The average usage of all the families compared favorably with the plan, but the usage of a large proportion of the individual families failed to meet the pattern. The results indicate a need for nutrition education.

As incomes increased, the greatest rate of increase in the usage of the food groups was in citrus fruits and tomatoes. As money value per meal increased, the usage of all the food groups, except dried beans, peas, and nuts, increased. On the average, meals valued at under 30 cents met all the National Research Council Recommended Dietary Allowances except for calories and calcium, yet failed to meet the amounts of the food groups recommended in an arbitrarily selected food pattern.

The influence of an increase in family size is evidenced by a relative decrease in usage of all food groups except milk. Any relationship between education of the housewife and food group usage was obscured by a corresponding increase in family income and money value per meal.

The families studied spent about one-sixth of their food dollar for milk; one-third for meat and eggs; about one-fifth for fruits and vegetables; one-tenth for grain products; and one-tenth for fats and oils and sweets combined.

TABLE 4

Comparison of average quantity of goods used by subjects in this study and by subjects in four cities studied by the Bureau of Human Nutrition and Home Economics (7)

LOCALITY	NUMBER OF HOUSEHOLDS	AVERAGE HOUSEHOLD SIZE	MILK EQUIVALENTS	POTATOES	DRY BEANS, PEAS, AND NUTS	GREEN LEAFY AND YELLOW VEGETABLES	CITRUS FRUITS AND TOMATOES	OTHER FRUITS AND VEGETABLES	MEAT, FISH, AND POULTRY	EGGS	FLOUR EQUIVALENTS	FATS AND OILS	SUGARS AND SWEETS	MISCELLANEOUS
		person-equivalents	*qt.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*doz.*	*lb.*	*lb.*	*lb.*	*lb.*
Groton Township, N. Y.														
Late fall, 1948	221	3.60	4.94	3.77	0.23	2.21	2.16	3.90	2.68	0.48	2.68	0.94	1.15	0.5
Birmingham, Ala.														
Winter, 1948 (7)	267	3.27	4.26	1.74	0.49	1.94	2.90	3.33	2.88	0.62	3.95	1.72	1.82	0
Buffalo, N. Y.														
Winter, 1948 (7)	258	3.63	5.08	2.74	0.23	2.00	3.96	3.53	3.39	0.53	2.78	1.00	1.52	0
San Francisco, Calif.														
Winter, 1948 (7)	288	2.97	5.67	1.80	0.28	2.96	4.24	4.60	3.81	0.58	2.59	1.07	1.30	0
Minneapolis, Minn.														
Winter, 1948 (7)	253	3.58	5.12	2.50	0.26	1.92	2.42	3.77	2.78	0.53	2.50	0.95	1.40	0

Families in this rural community area used less milk, meat, eggs, citrus fruits and tomatoes, and sweets, but more potatoes than three northern cities surveyed in 1948 by the Bureau of Human Nutrition and Home Economics. This was true even though the Groton figures made no deductions for waste while the figures reported by the Bureau included waste allowances.

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Sugar Fructose in Serum of Patients with Rheumatic Fever, Rheumatoid Arthritis, Cancer, and Tuberculosis

Work at Northwestern University Medical School's Rheumatic Fever Research Institute has shown that there is a common denominator of disease in the blood of patients suffering from cancer, tuberculosis, rheumatic fever, and rheumatoid arthritis. An international team composed of Dr. Washington Ayala Bonilla of the University of Montevideo, Uruguay, and Dr. Eugene L. Hess of Northwestern, reported at the 118th national meeting of the American Chemical Society in Chicago in September that an abnormal amount of the simple sugar fructose, bound to proteins in the blood serum, links all four diseases for the first time.

According to the report, "The sugar is bound to complex carbohydrate-containing proteins called mucoproteins and is present in the alpha globulin fraction of the blood serum protein." It has been known for several years that these mucoproteins are present in larger amounts in the serum of individuals suffering from cancer and tuberculosis. That this is true for rheumatic fever and rheumatoid arthritis as well has been learned from the work of Drs. Ayala and Hess.

"The fact that cancer, rheumatic fever, rheumatoid arthritis, and tuberculosis have the common property of an increased level of certain mucoproteins in blood serum indicates that, at least in part, the biochemical mechanism of these apparently unrelated diseases is similar," the report asserted. The presence of simple sugar fructose in the blood of such patients was uncovered during research on an unusual color reaction given by serum. When diphenylamine is dissolved in sulphuric acid and this reagent added to the serum of animals or humans, a purple color develops. The serum of individuals suffering from any of these four diseases gives a purple of greater intensity than does the serum of healthy persons.

Drs. Ayala and Hess became interested in this reaction when they observed that certain fractions obtained from beef tonsils which gave the purple color were rich in mucoproteins. Not all mucoproteins, however, give this reaction, indicating basic differences in the composition of these mucoproteins. The substances in serum which gave the purple color were found to be the alpha globulins, which are for the most part, proteins which bind sugars, and Drs. Ayala and Hess reasoned that the particular substance which gave this reaction with diphenylamine must be sugar.

All of the sugars they examined, however, including sucrose and fructose, gave a negative test. Not until they examined the conditions of the reaction itself and had developed more sensitive conditions did they find that fructose, sucrose, and sorbose, a closely related sugar, reacted with diphenylamine to produce a purple color.

In addition to blood serum, they found that extracts, saliva, cartilage, synovial fluid from the knee joint, and urine also produced the purple color, although in urine, the sugar appears not to be attached to proteins. These findings may furnish a clue both as to the source of production and the physiologic function of these carbohydrate protein complexes in blood serum. It is also known that other carbohydrates, very similar in structure to fructose—the family of sugars called ketoses—likewise give the purple color reaction, so that this color test in serum may result from the presence of several closely related carbohydrates rather than from the presence of any one in particular.

Nutrititional Status of Children

XIV. Urinary Excretions of Thiamine and Riboflavin[1]

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THIAMINE and riboflavin, components of the B-complex, are closely associated in vegetable and animal tissues; they are important for growth and metabolism and presumably form essential parts of the enzyme systems underlying living processes. The human requirements of these two vitamins are influenced by the nature of the diet, the quantity of food consumed, and the basal metabolic rate. Decreased excretion of thiamine or riboflavin from persons consuming a high-carbohydrate diet is considered to indicate an increased need for these vitamins in the metabolism of the food; therefore, the proportion of carbohydrate, fat, and protein of the diet may be important factors in determining the daily needs of one or both of these vitamins. They also may be synthesized to a moderate degree in the intestinal tract. Because of increased tissue formation and accelerated metabolic activity which characterizes growth, it is assumed that actively growing children have relatively higher requirements than those of adults (1, 2).

One of the difficulties in determining thiamine and riboflavin requirements and nutritional status has been the lack of suitable methods. Most investigators favor the use of thiamine and riboflavin concentrations in blood and urine to judge nutritional status rather than medical inspection alone. Despite the controversy that still exists over the scientific merits of the results of blood and urine studies, the excretion of thiamine or riboflavin in urine has been widely used to measure the body's utilization of these vitamins. When urinary excretion tests for thiamine and riboflavin are interpreted, it is assumed that excretion is indicative of the state of tissue saturation. Low intakes of these vitamins, in most cases, are associated with lowered urinary excretions; however, normal urinary thiamine outputs have been found in patients with clinical manifestations of beriberi (3).

Probably the most accurate means of evaluating nutritional status with respect to thiamine or riboflavin is by measurement of the excretion of these vitamins over a 24-hr. period. Since this procedure is too costly and time-consuming to warrant use in mass nutritional survey studies of populations, simpler methods have been devised. For the fasting-hour excretion test, a sample is collected before breakfast following a 12- to 14-hr. fast. In the 4-hr. load test, in which a given amount of the vitamin is administered and the resulting urinary excretion is measured, the 4-hr. period between breakfast and lunch is usually chosen. The fraction of the 24-hr. output of the vitamins which is excreted in the first 4 hr. after the test dose has been reported as between 15 and 70 per cent for thiamine (4–6) and 45 and 100 per cent for riboflavin (4).

Thiamine and riboflavin may be administered parenterally or orally. The oral route, although influenced to a certain extent by variations in intestinal absorption and synthesis, is considered the more physiologic method and is the most practical in a study of large groups of individuals. The amounts of the vitamins given in the load tests have varied widely. The usual test dose of thiamine for adults has been between 2 and 5 mg. and that for children from 0.5 to 1 mg. (7). Melnick, Field, and Robinson (6) and Jowett (5), among others, have shown that the time at which the test dose is given and the length of the collection period following will affect the results. Moreover, variations among individuals may be considerable since the level of urinary excretion of the vitamins appears to be influenced by the individual's physiologic characteristics (8).

In evaluating excretions of thiamine and riboflavin in children and adults, fasting tests have been reported by some workers to be preferable to load tests (9). Other workers report good correlation between the fasting level and the 24-hr. output (10, 11) and between the intake of riboflavin and the 1-hr. fasting excretion test (12). Nevertheless, some investigators believe that the load test is the better

[1] Received for publication June 30, 1950.

method for determining the state of thiamine nutriture (6, 13). Since fasting excretion may depend upon recent dietary intake, the load test has been considered a better indication of the actual concentration of vitamins in the tissues (13). In a study of rats, however, it was found that the response to load tests was a sensitive index of the change in tissue content of these vitamins, but that the fasting excretion levels are dependent primarily upon the amount of vitamins recently ingested (14). Notwithstanding, some writers believe that neither the fasting-hour test nor the 4-hr. load test provides a reliable criterion of nutritional status of these vitamins (7, 15, 16). A detailed resumé of the relative merits of various excretion tests with a review of the literature has been recorded (2).

As a part of a nutritional status study conducted in five Michigan child-caring agencies, the nutriture of the children was determined by means of various combinations of blood, dietary, and medical findings (17–28). The Methodist Children's Village, a cottage-plan home, and the Boys Republic, a corrective institution for delinquent adolescents, are both in the suburbs of Detroit, while the Holy Family Orphans' Home and St. Joseph's Home are orphanages in more rural sections of northern Michigan. The Bay Cliff Health Camp on Lake Superior cares for children in need of nutritional reconditioning and treatment for physical handicaps. The youngsters in these five groups were of both sexes, ranging in age from three to eighteen years. This report, which extends the scope of the investigation by presenting a study of thiamine and riboflavin excretions evaluated from fasting-hour and 4-hr. load tests of the vitamins, may contribute toward the formulation of more satisfactory standards for judging physiologic performance and nutritional status of children.

EXPERIMENTAL PROCEDURE

Three hundred and seventy-four children, thirty-four of whom were studied twice, participated in the studies of urinary excretions of thiamine and riboflavin. At the Children's Village, fasting samples were collected for three successive days in the spring and two successive days the following fall. The load test doses of the vitamins were given on the last experimental day in each season. Results of the consecutive samples in the spring were averaged to give one value, as were those in the fall. At the Holy Family Orphans' Home, the St. Joseph's Home, and the Boys Republic, urinary excretions of thiamine and riboflavin were determined for samples collected in the fall. For the children at the Bay Cliff Camp, the values were determined from an average of one to four samples obtained during a seven-week camp period. For all children, excretions of thiamine and riboflavin were determined, in duplicate, in 374 samples collected for a 1-hr. fasting period and in 306 samples of urine representing excretion of a load-test dose during 4 hr. The organization of the survey, the procedures, and the handling of the biologic samples have been presented in detail in a previous publication (17).

After rising and urination, each child was given 75 to 125 ml. water to insure production of an adequate volume of urine. One hr. later a fasting sample of urine was obtained after which each child was given, orally in solution, 1 mg. each of thiamine and riboflavin with a breakfast poor in vitamins (boiled white rice, sugar, and butter with limited amounts of unfortified white bread and toast). Urine was collected for the 4-hr. period following ingestion of the test breakfast.

The volumes of urine collected for the 1-hr. fasting period and the 4 hr. following ingestion of the test dose were measured and enough glacial acetic

TABLE 1

Reproducibility of thiamine determinations in duplicate, fasting-hour urine samples

THIAMINE CONCENTRATION LEVEL	NUMBER OF DIFFERENCES ACCORDING TO DEVIATIONS BETWEEN DUPLICATE SAMPLES										
	0–0.1 mcg./hr.	0.1–0.2 mcg./hr.	0.2–0.3 mcg./hr.	0.3–0.4 mcg./hr.	0.4–0.5 mcg./hr.	0.5–0.6 mcg./hr.	0.6–0.7 mcg./hr.	0.7–0.8 mcg./hr.	0.8–0.9 mcg./hr.	0.9–1.0 mcg./hr.	1.0+ mcg./hr.
mcg./hr.											
18–20	1										
16–18	2		1		1						
14–16	3	1	1	2	1					1	
12–14	1	4	2	3	1	1	1				
10–12	4	2	3	1	1	1	1	1			
8–10	6	7	3	4	2	2					1
6–8	12	6	3	4		1		1			
4–6	11	5	8	2	1	1					
2–4	17	8	2	1	2						
0–2	1										
Number of differences	58	33	23	17	9	6	2	2		1	1
Percentage of total	38	22	15	11	6	4	1	1		1	1

TABLE 2

Reproducibility of riboflavin determinations in duplicate, fasting-hour urine samples

RIBOFLAVIN CONCENTRATION LEVEL	NUMBER OF DIFFERENCES ACCORDING TO DEVIATIONS BETWEEN DUPLICATE SAMPLES										
	0–0.5 mcg./hr.	0.5–1.0 mcg./hr.	1.0–1.5 mcg./hr.	1.5–2.0 mcg./hr.	2.0–2.5 mcg./hr.	2.5–3.0 mcg./hr.	3.0–3.5 mcg./hr.	3.5–4.0 mcg./hr.	4.0–4.5 mcg./hr.	4.5–5.0 mcg./hr.	5.0+ mcg./hr.
mcg./hr.											
100–110		1	1								
90–100	1		1								
80–90	3		1	1							
70–80	3		2								
60–70	8	4	2								
50–60	6	7	1	1			1				1
40–50	8	9	4		1		3				
30–40	24	11	3	1		1					
20–30	22	7	3								
10–20	11	1	1								
0–10											
Number of differences	86	40	19	3	1	1	4				1
Percentage of total	55	26	12	2	1	1	2				1

TABLE 3

Variability of the fasting-hour urinary thiamine determinations on samples from the same children on consecutive days

THIAMINE CONCENTRATION LEVEL	NUMBER OF DIFFERENCES ACCORDING TO DEVIATIONS FROM DAY TO DAY											
	0–0.5 mcg./hr.	0.5–1.0 mcg./hr.	1.0–1.5 mcg./hr.	1.5–2.0 mcg./hr.	2.0–2.5 mcg./hr.	2.5–3.0 mcg./hr.	3.0–3.5 mcg./hr.	3.5–4.0 mcg./hr.	4.0–4.5 mcg./hr.	4.5–5.0 mcg./hr.	5.0–5.5 mcg./hr.	5.5–6.0 mcg./hr.	6.0+ mcg./hr.
mcg./hr.													
16–18		1											
14–16							1						
12–14													
10–12	1			1	1	1							
8–10	1	3	3	2		1	1		1				1
6–8	8	6	4	3	3	1			1		1		
4–6	20	8	8	4		2	2		1		1		1
2–4	8	15	5	3	2		1						
0–2													
Number of differences	38	33	20	13	6	5	5		3		2		2
Percentage of total	30	26	15	10	5	4	4		2		2		2

TABLE 4

Variability of the fasting-hour urinary riboflavin determinations on samples from the same children on consecutive days

RIBOFLAVIN CONCENTRATION LEVEL	NUMBER OF DIFFERENCES ACCORDING TO DEVIATIONS FROM DAY TO DAY										
	0–4 mcg./hr.	4–8 mcg./hr.	8–12 mcg./hr.	12–16 mcg./hr.	16–20 mcg./hr.	20–24 mcg./hr.	24–28 mcg./hr.	28–32 mcg./hr.	32–36 mcg./hr.	36–40 mcg./hr.	40+ mcg./hr.
mcg./hr.											
80–90							1				
70–80											
60–70	1	3	1								
50–60	1	5	4	2	1			1		1	
40–50	4	6	3	5	2	3	1	1	1		
30–40	12	14	5	3	4	1	1	2	1		
20–30	9	7	5	2	2	3	1	3			1
10–20	3			1							
0–10											
Number of differences	30	35	18	13	9	7	4	7	2	1	1
Percentage of total	24	28	14	10	7	5	3	5	2	1	1

acid added to bring the concentration of acid to 2 per cent. The pH varied from 2.5 to 3.5, the range of optimum stability for creatine and creatinine. Aliquots of urine were quick-frozen in 250-ml. centrifuge bottles and held at −30° F., pending analyses for thiamine and riboflavin, essentially as described by Hennessy (29) and by Ferrebee (30).

In making short-interval urine collections, accuracy of timing is difficult even with adults; with young children, the problems are greater. For this reason all urine samples were analyzed for total nitrogen, creatinine, and creatine, and any results showing obvious error on the basis of these determinations were omitted. The load-test returns were corrected for the time interval between collection of the fasting sample and ingestion of the load-test doses, and the per cent recoveries of the vitamins given were corrected by deducting amounts representing the fasting excretion for the duration of the tests.

RESULTS AND DISCUSSION

The variations found in analyses of duplicate samples for fasting-hour urinary excretions of thiamine and riboflavin are presented in Tables 1 and 2. The average deviations of samples from their duplicates were 0.21 mcg. per fasting hour for thiamine and 0.67 mcg. per hour for riboflavin, which are 2.7 and 1.6 per cent, respectively, of the mean values of 1-hr. fasting samples.

The variability in excretions of thiamine and of riboflavin in fasting-hour urine samples collected from the youngsters at Children's Village on consecutive days is given in Tables 3 and 4. The average day-to-day deviations were 1.27 and 11.10 mcg. per hour for thiamine and riboflavin, respectively. Seventy per cent of the daily differences in thiamine concentration were higher than 0.50 mcg. per hour, indicating considerably greater variability on consecutive days than can be attributed to method alone, since 92 per cent of the differences between duplicate samples were less than this amount. Similarly, 76 per cent of the daily differences in riboflavin excretion were greater than 4 mcg. per hour, showing more variability on consecutive days than could be attributed to method alone since 99 per cent of the deviations of samples from their duplicates were smaller than this level.

The distributions of thiamine and riboflavin excretions in fasting-hour and 4-hr. load test samples are presented by age and sex for the groups of children studied in Table 5 and for all the children together in Table 6. In general, there was a consistent sex difference in the excretions of these vitamins, the boys excreting larger quantities than the girls at all ages. The mean fasting-hour excretions of thiamine for boys and girls were 8.4 and 7.0 mcg., while the 4-hr. load test excretions amounted to 153.9 and 140.9 mcg., respectively. The mean fasting-hour and the load test excretions of riboflavin were 45.2 and 37.8 mcg. and 351.4 and 344.4 mcg., respectively, for boys and girls.

The distribution of children according to levels of thiamine excretion during 1-hr. fasting and 4-hr. load tests of thiamine is shown in Table 7. Assuming that a fasting urinary excretion of thiamine below 6.0 mcg. (4) indicates an inadequate dietary intake or unsatisfactory utilization, in 374 children from whom samples were collected, 65 or 28 per cent of the boys and 61 or 44 per cent of the girls, were low in thiamine. Considering a 4-hr. excretion value under 100 mcg. (2) from a 1-mg. load test as a criterion for critical tissue saturation, of the 306 children for whom data are available, 22 or 13 per cent of the boys and 27 or 20 per cent of the girls were in a suboptimal state of thiamine nutriture.

The distribution of the children according to levels of 1-hr. fasting and 4-hr. load tests of riboflavin is shown in Table 8. In using the criterion that a fasting-hour excretion level of riboflavin under 20 mcg. (2) indicates a lowered nutritive state, 7 of the 235 boys (3 per cent) and 15 of the 139 girls (11 per cent) in the study were unsatisfactorily nourished with respect to this vitamin.

Since thiamine and riboflavin are associated with metabolic activity and basal heat production, increased tissue formation and accelerated metabolic activity are assumed to increase the requirements for these vitamins. Since boys possess a higher basal metabolic rate and excrete a greater amount of preformed creatinine than girls of the same age (31), sex differences might be expected in the urinary concentrations of thiamine and riboflavin. Characteristic physiologic variabilities among children of the same age and sex are recognized, and in this study children were not equally well-nourished and the diets of the various groups differed in quality. The combined data for all children show that the boys at older age levels tended to sustain higher mean levels of excretion than girls of comparable age. This trend was consistent with the differences in rate of maturation of boys and girls.

Individuals consuming an adequate diet may not be equally well nourished with respect to thiamine and riboflavin, although deficiencies cannot be detected. However, in evaluating nutritional status, the exact quantities in the 1-hr. fasting excretions which indicate deficiency have been defined in various studies to be from 0 to 4 mcg. for thiamine and 20 mcg. per hour or less for riboflavin (2). With the 4-hr. load test using 1 mg. thiamine, it is alleged that an excretion of less than 100 mcg. indicates a state of deficiency; the value of the riboflavin load test is more variable and less significant (2).

In Figure 1 are illustrated the minimum, maximum, and mean values with standard deviations for the urinary excretions of thiamine of the children

TABLE 5

Distribution of fasting-hour and 4-hr. load urinary thiamine and riboflavin excretions by age of subjects and institution

AGE	CHILDREN IN METHODIST CHILDREN'S VILLAGE								CHILDREN IN HOLY FAMILY ORPHAN'S HOME								CHILDREN IN ST. JOSEPH'S HOME								BOYS IN BOYS REPUBLIC		CHILDREN IN BAY CLIFF HEALTH CAMP					
	Fasting Test				Load Test				Fasting Test				Load Test				Fasting Test				Load Test				Fasting Test		Fasting Test				Load Test		
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female				Male		Female		Male		Female	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Thiamine																																
yr.		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*		*mcg.*
18			2	3.71			2	99.47																								
17																									1	7.12						
16			2	4.28			2	156.95			1	5.12			1	90.99					1	112.23			16	7.23						
15	3	5.41	8	4.87			7	107.50	3	11.18			3	159.34					3	4.57			3	130.14	23	8.05	1	10.29			1	218.50		
14	4	9.06			4	96.86			3	9.00			2	154.40			1	4.43	1	3.96	1	134.55	1	87.74	12	9.09	1	9.16	1	5.21	1	210.16	1	150.42
13	3	6.55	1	4.83	2	135.51	1	123.09	4	9.30	4	10.28	3	157.29	4	122.02	1	2.37	3	3.89	1	45.36	3	72.34	1	5.71	4	7.26	4	10.60	4	153.54	4	206.71
12	8	8.16	6	9.62	6	150.68	6	172.20	5	12.39	2	10.22	5	157.32	1	165.84			2	4.64	1	25.49	2	89.48			4	11.04	6	9.74	4	116.82	6	186.36
11	5	9.79	8	5.58	4	148.66	8	129.39	3	10.70	1	9.29	3	200.23	1	160.77	3	6.09			3	127.24					12	10.36	5	12.63	12	177.52	5	196.36
10	5	9.49	3	4.83	5	156.74	3	100.54	9	10.16	2	9.87	9	173.43	2	173.38	1	2.71			2	93.10					9	9.36	8	9.91	9	179.00	8	169.79
9	8	7.47	5	6.33	7	149.53	5	134.69	8	10.15	2	9.36	8	157.18	2	177.60	2	4.51	1	8.17	2	91.86	1	127.07			12	9.37	6	7.45	14	174.44	6	169.84
8	6	5.51	7	5.45	3	148.85	0	130.78	7	9.07	2	6.78	6	155.92	1	92.81			1	4.80			1	132.41			4	10.12	6	7.06	4	200.18	6	181.28
7	5	6.67	1	4.47	4	150.09	1	117.28	6	8.46	4	8.36	6	116.34	4	116.02	2	5.31	4	4.39	2	80.10	4	97.82			5	7.85	2	8.09	6	117.50	2	136.04
6	2	7.94	2	7.59	1	122.21	2	117.64	5	6.85	5	7.56	5	124.32	4	136.17	4	4.68	3	3.81	3	80.01	3	140.53			1	8.38	2	6.53	1	243.16	2	173.54
5									4	10.98	4	5.81	5	178.41	4	102.98	1	4.28			1	163.58												
4									1	6.76	3	4.74	2	150.58	2	89.20	1	2.90	3	3.32	1	150.95	3	109.00										
3									4	9.46	1	9.15	4	184.55	1	99.89	1	4.13	2	2.65	1	115.90	2	92.74										
2																	1	3.87			1	119.92												
Total children	49		45		36		43		62		31		61		27		18		23		20		23		53		53		40		56		40	
Mean		7.7		5.9		143.2		133.0		9.7		7.9		158.2		125.9		4.5		4.2		101.0		106.9		8.0		9.5		9.1		175.0		179.0
Standard deviation		3.0		2.6		45.2		35.4		3.1		3.2		42.3		42.2		1.6		1.5		41.3		35.0		3.2		3.4		3.8		46.0		37.0
Standard error of mean		0.4		0.4		7.5		5.4		0.4		0.6		5.4		8.1		0.4		0.3		9.2		7.3		0.4		0.5		0.6		6.1		5.8
Riboflavin																																
18			2	37.48			2	390.74																								
17																									1	69.60						
16			2	30.86			2	403.88			1	43.07			1	544.65					1	419.32			16	58.82						
15	3	35.36	8	33.77			7	358.27	3	53.34			3	384.86					3	38.34			3	474.25	23	48.86	1	73.11			1	451.11		
14	4	65.09			4	400.66			3	36.80			2	350.10			1	35.68	1	19.85	1	371.63	1	240.77	12	60.15	1	29.71	1	25.89	1	361.24	1	319.13
13	3	57.40	1	14.24	2	402.76	1	123.09	4	35.97	4	20 22	3	435.43	4	219.55	1	21.86	3	26.05	1	327.60	3	221.11	1	35.94	4	27.95	4	55.18	4	255.97	4	214.47
12	8	44.29	6	45.61	6	355.47	6	332.90	5	28.46	2	33.62	5	383.70	1	587.85			2	32.36	1	385.10	2	258.52			4	49.71	6	41.60	4	290.85	6	237.93
11	5	53.47	8	49.88	4	354.60	8	374.81	3	51.77	1	19.84	3	433.00	1	398.97	3	51.98			3	338.25					12	49.82	5	48.30	12	264.98	5	262.26
10	5	53.99	3	41.46	5	260.12	3	308.12	9	35.73	2	35.67	9	373.50	2	732.88	1	23.49			2	390.34					9	39.86	8	40.15	9	253.20	8	279.32
9	8	45.08	5	44.83	7	333.88	5	434.88	8	35.33	2	20.48	8	416.84	2	472.08	2	47.22	1	43.91	2	486.00	1	404.07			12	53.80	6	39.66	14	296.75	6	314.60
8	6	46.46	7	37.52	3	323.48	6	373.75	7	37.67	2	30.40	6	435.42	1	509.98			1	35.24			1	280.44			4	48.14	6	47.63	4	289.44	6	356.88
7	5	35.88	1	31.12	4	414.84	1	460.58	6	31.47	4	38.49	6	369.35	4	321.94	2	25.20	4	27.16	2	189.34	4	344.78			5	39.35	2	59.12	6	288.44	2	201.43
6	2	45.86	2	39.84	1	349.45	2	355.64	5	40.89	5	39.02	5	368.50	4	385.54	4	27.12	3	34.86	3	517.02	3	405.40			1	41.74	2	33.86	1	428.68	2	301.76
5									4	54.44	4	23.23	5	389.90	4	417.10	1	17.71			1	315.02												
4									1	43.09	3	30.64	2	367.94	2	404.50	1	26.30	3	29.47	1	450.80	3	371.13										
3									4	31.52	1	59.21	4	497.67	1	261.25	1	35.35	2	19.06	1	489.00	2	376.63										
2																	1	25.65			1	454.60												
Total children	49		45		36		43		62		31		61		27		18		23		20		23		53		53		40		56		40	
Mean		47.8		40.4		349.3		365.8		38.1		31.5		400.4		403.6		33.1		30.3		393.0		347.4		54.6		46.2		44.2		284.5		279.6
Standard deviation		13.7		12.2		106.8		95.8		16.0		13.1		100.0		153.8		13.9		9.2		144.9		122.7		20.0		14.7		19.3		91.3		98.9
Standard error of mean		2.0		1.8		17.8		14.6		2.0		2.4		12.8		29.6		3.3		1.9		32.4		25.6		2.7		2.0		3.0		12.2		15.6

in the different groups. In Figure 2 are shown the minimum, maximum, and mean values with standard deviations for the urinary riboflavin excretions of children in the different homes.

Boys Republic

At the Boys Republic, where fifty-three adolescent boys age thirteen to seventeen years, were studied, only fasting-hour samples of thiamine were obtained. These varied from 2 to 16 mcg. (Fig. 1). So wide a range agrees with the findings of Mickelsen, Castor, and Keys (8) who have observed that on normal levels of thiamine intake, one adult may excrete two or three times as much thiamine as another, and that the amount excreted on a given level of intake is highly characteristic of the individual. The mean thiamine excretion value of 8.0 mcg. compares favorably with the fasting excretion values of the boys of other institutions in this study (Tables 5 and 6). The mean fasting excretion level of riboflavin was higher than that observed at any of the other institutions. The values ranged from 20 to 100 mcg. with a mean of 54.6 mcg. (Fig. 2) and were distributed among the highest levels of excretion from all the children in this study. This group of adolescent boys enjoyed an exceptionally ample food intake (25), some active, growing, and industrious boys consuming quantities in excess of the usual allowances.

Holy Family Orphan's Home

At the Holy Family Orphan's Home the levels of thiamine excretion ranged from 2 to 22 mcg. per fasting hour with mean values of 9.7 and 7.9 mcg. for boys and girls, respectively (Table 5). After the administration of the load test dose, the values for the group of children ranged from 40 to 280 mcg. The mean excretion levels were 158.2 and 125.9 mcg. for boys and girls, respectively, with an average of 148.3 mcg. (Fig. 1). By analysis (28), the diet was found to contain 1.2 mg. thiamine per day, approximately 0.5 mg. per 1000 calories. As shown in the mean figures for the five groups of children, the boys excreted a larger amount of this vitamin than did the girls, 11.9 per cent of the test dose and 9.4 per cent, respectively.

The lowest mean fasting excretions of riboflavin occurred in the Holy Family Orphans' Home and St. Joseph's Home, where the milk consumption in large measure was dependent upon milk production of the institutions' dairies and a large part of the food was produced on their own farms. At the Holy Family Orphans' Home, the mean fasting excretions of riboflavin were 38.1 and 31.5 mcg., respectively, for boys and girls. In response to the test dose the mean excretions for boys and girls were 400.4 and 403.6 mcg., respectively (Table 5). The boys and girls returned 24.8 and 27.8 per cent, respectively, of the test dose of riboflavin. In Figure 2 are pre-

TABLE 6

Distribution of fasting hour and 4-hr. load urinary thiamine and riboflavin excretion for all children in study

AGE	TOTAL CHILDREN							
	Fasting Test				Load Test			
	Male		Female		Male		Female	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Thiamine								
yr.		*mcg.*		*mcg.*		*mcg.*		*mcg.*
18			2	3.71			2	99.5
17	1	7.12						
16	16	7.23	3	4.56	1	112.2	3	135.0
15	30	8.17	11	4.79	4	174.1	10	114.3
14	21	8.85	2	4.58	8	130.1	2	119.1
13	13	7.23	12	8.34	10	140.2	12	137.9
12	17	10.08	16	9.12	16	136.5	15	166.4
11	23	9.72	14	8.36	22	168.5	14	155.5
10	24	9.41	13	8.73	25	165.7	13	156.6
9	30	8.75	14	7.38	31	159.0	14	155.3
8	17	8.06	16	6.18	13	167.9	14	149.8
7	18	7.44	11	6.51	18	140.2	11	113.2
6	12	6.44	12	6.46	10	122.7	11	151.7
5	5	9.64	4	5.81	6	175.9	4	103.0
4	2	4.83	6	4.03	3	150.7	5	101.1
3	5	8.40	3	4.82	5	170.8	3	95.1
2	1	3.87			1	119.9		
Total children	235		139		173		133	
Mean		8.4		7.0		153.9		140.9
Standard deviation		3.4		3.5		49.0		45.4
Standard error of mean		0.2		0.3		3.7		3.9
Riboflavin								
18			2	37.48			2	390.7
17	1	69.60						
16	16	58.82	3	34.93	1	419.3	3	450.8
15	30	48.76	11	35.02	4	401.4	10	393.1
14	21	55.14	2	22.87	8	379.5	2	280.0
13	13	37.36	12	32.83	10	346.3	12	210.2
12	17	40.91	16	40.95	16	346.9	15	302.0
11	23	51.15	14	47.17	22	314.2	14	336.3
10	24	40.58	13	39.76	25	308.9	13	355.7
9	30	46.11	14	39.07	31	348.3	14	386.4
8	17	43.24	16	40.28	13	364.7	14	369.6
7	18	34.19	11	37.45	18	332.5	11	320.9
6	12	37.20	12	37.26	10	417.2	11	370.3
5	5	47.10	4	23.23	6	377.4	4	417.1
4	2	34.70	6	30.05	3	395.6	5	384.5
3	5	32.28	3	32.44	5	495.9	3	338.2
2	1	25.65			1	454.6		
Total children	235		139		173		133	
Mean		45.2		37.8		351.4		344.4
Standard deviation		17.4		15.4		115.4		122.9
Standard error of mean		1.1		1.3		8.8		10.7

TABLE 7

Distribution of children according to levels of fasting-hour and 4-hr. load tests of urinary thiamine

LEVEL OF URINARY THIAMINE	NUMBER OF CHILDREN IN METHODIST CHILDREN'S VILLAGE		NUMBER OF CHILDREN IN HOLY FAMILY ORPHANS' HOME		NUMBER OF CHILDREN IN ST. JOSEPH'S HOME		NUMBER OF BOYS IN BOYS REPUBLIC	NUMBER OF CHILDREN IN BAY CLIFF HEALTH CAMP		TOTAL NUMBER OF CHILDREN	
	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female
Fasting-Hour Samples											
mcg./hr.											
22									1		1
20				1				1	1	1	2
18								1		1	
16	2	1	1							3	1
14			7				3	3	1	13	1
12	2		8				6	4		20	
10	6	2	10	3			4	13	10	33	15
8	8	4	20	11	1	1	10	15	9	54	25
6	14	12	8	5	2	2	13	8	14	45	33
4	17	17	8	10	7	7	13	7	3	52	37
2		9		1	8	13	4	1	1	13	24
4-Hr. Load Test Samples											
mcg./4 hr.											
260			1					2	1	3	1
240	1		1					1	3	3	3
220	1	1	3					5	3	9	4
200	2	1	4	1				11	2	17	4
180	2	3	9	1	1			10	6	22	10
160	6	4	11	4	1	1		7	9	25	18
140	7	7	9	6	1	2		6	14	23	29
120	8	12	12	3	2	8		4	2	26	25
100	4	7	5	3	6	2		8		23	12
80	3	5	6	4	2	4		1		12	13
60	1	3		3	4	3		1		6	9
40				2	2	3				2	5
20					1					1	
0	1									1	

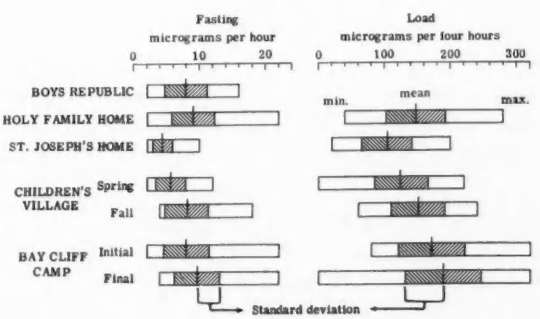

FIG. 1. *Urinary thiamine excretions of children in care of Michigan child-caring agencies.*

sented the mean values of the fasting and load excretions for all the children at the Holy Orphans' Home. The fasting excretion values ranged from 10 to 100 mcg., with an average of 35.9 mcg.; the mean amount returned from the 4-hr. load tests was 401.4 mcg., with values ranging from 100 to 850 mcg.

St. Joseph's Home

The children at St. Joseph's Home had the lowest fasting level of riboflavin of all the groups, 33.1 and 30.3 mcg. for boys and girls, respectively. Load test values were 393.0 mcg. for boys and 347.4 mcg. for girls (Table 5). The boys excreted 26.1 per cent of the test dose and the girls 22.6 per cent. The levels of the fasting excretion ranged from 10 to 70 mcg., with a mean value of 31.5 mcg., and the mean load test excretion was 368.6 mcg. with results varying from 100 to 800 mcg. (Fig. 2).

For the children at St. Joseph's Home, both the fasting and load-test excretions of thiamine showed the lowest levels found in the entire study. The mean fasting level was 4.3 mcg., with values ranging from 2 to 10 mcg.; from the load test, the values ranged from 20 to 200 mcg. with a mean level of 104.2 mcg. (Fig. 1). The mean fasting levels for boys and girls were close, 4.5 and 4.2 mcg., respectively; and at the same time, in response to the load test, mean values were 101.0 mcg. and 106.9 mcg. for boys and girls, respectively (Table 5). The boys returned 8.3 per cent of the test dose in the 4-hr.

period and the girls 9.0 per cent. Judging by the fasting levels of excretion, 83 per cent of the eighteen boys and 87 per cent of the twenty-three girls were in a state of deficiency with respect to thiamine, and by the load test excretion values 45 and 43 per cent, respectively.

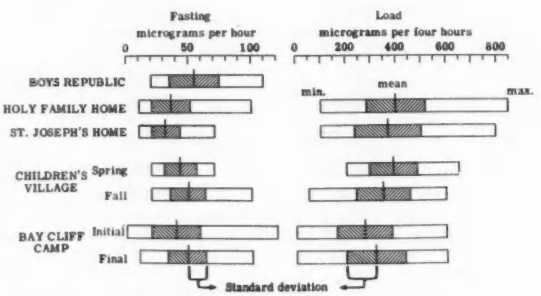

FIG. 2. *Urinary riboflavin excretions of children in care of Michigan child-caring agencies.*

Methodist Children's Village

The mean fasting excretions of thiamine for thirty-four children tested both seasons at the Methodist Children's Village (Fig. 1) were 5.7 mcg. per hour in the spring and 8.3 mcg. in the fall, with corresponding ranges of 2 to 12 mcg., and 4 to 18 mcg. After the administration of the test dose, the mean load excretions for the twenty-six children for whom data are available were 126.8 mcg. and 149.8 mcg. in the spring and fall, respectively, with ranges of 0 to 220 mcg. and 60 to 240 mcg., respectively, in the two seasons. The fasting and load excretions of thiamine in the spring are exceeded by those in the fall, indicating the dietary change that occurred in the summer when home-grown vegetables were available to supplement the purchased foods.

For thirty-four subjects at the Children's Village from whom samples were obtained, fasting riboflavin values were higher in the fall than in the spring (Fig. 2), as were those of thiamine. The mean values

TABLE 8

Distribution of children according to levels of fasting-hour and 4-hr. load tests of urinary riboflavin

LEVEL OF URINARY RIBOFLAVIN	NUMBER OF CHILDREN IN METHODIST CHILDREN'S VILLAGE		NUMBER OF CHILDREN IN HOLY FAMILY ORPHANS' HOME		NUMBER OF CHILDREN IN ST. JOSEPH'S HOME		NUMBER OF BOYS IN BOYS REPUBLIC	NUMBER OF CHILDREN IN BAY CLIFF HEALTH CAMP		TOTAL NUMBER OF CHILDREN	
	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female
Fasting-Hour Samples											
mcg./hr.											
100							3		1	3	1
90	1		1							2	
80			1				3	1	1	5	1
70	1		3				4	3	2	11	2
60	7	3	1	1	1		7	4	2	20	6
50	10	7	2	2	2	1	9	14	7	37	17
40	15	10	15	3		1	11	12	9	53	23
30	12	15	17	9	5	10	15	11	9	60	43
20	3	9	18	9	9	8	1	6	5	37	31
10		1	4	7	1	3		2	4	7	15
4-Hr. Load Test Samples											
mcg./4 hr.											
800				1							1
750					1					1	
700											
650			1	1		1				1	2
600	1		1	1						2	1
550		2	1	2	1	1				2	5
500	2		7	2					1	9	3
450	1	8	8	1	5	1		4		18	10
400	9	3	13	2	2	1		3	4	27	10
350	6	8	6	6	5	9		8	4	25	27
300	7	13	15	5	3	2		6	7	31	27
250	3	6	7	3	1	2		12	8	23	19
200	4	2	2	1		4		15	7	21	14
150	2			1	1	2		7	5	10	8
100		1		1	1			1	3	2	5
50	1								1	1	1

in both seasons showed a fairly consistent trend: 49.5 mcg. in the spring for boys and 37.5 mcg. for girls, and in the fall for boys 53.0 mcg. and for girls 45.3 mcg. The range of 20 to 70 mcg. in the spring averaged 43.2 mcg., and the mean level for the fall of 49.0 mcg. was obtained from values ranging from 20 to 100 mcg. However, considerable contrast was evident in the load excretions, with means of 387.3 and 347.5 mcg. in the spring and fall, respectively. The values ranged from 200 to 650 mcg. in the spring and 50 to 600 mcg. in the fall.

Disregarding season, the mean fasting values of thiamine (Table 5) for the youngsters sampled in spring and fall were 7.7 mcg. for 49 boys and 5.9 mcg. for 45 girls. The values ranged from 2 to 18 mcg., with a mean value of 6.8 mcg. for both sexes. The mean load excretions averaged 143.2 mcg. for 36 boys and 133.0 mcg. for 43 girls; the boys excreted 11.2 per cent of the load test while the girls excreted 10.9 per cent. The mean load excretion value for both sexes was 137.7 mcg. and was obtained from values ranging from 0 to 260 mcg. More girls than boys were in a state of deficiency with respect to thiamine when judged by both the fasting and the load excretions (Table 7).

Averaging the figures for both seasons, the youngsters at the Children's Village showed high fasting excretions of riboflavin, with a mean of 47.8 mcg. for the boys and 40.4 mcg. for the girls, and a range of 10 to 100 mcg. Following the load dosage, the corresponding mean excretion values were 349.3 and 365.8 mcg. with a range of 50 to 650 mcg. (Table 5). The boys and girls returned 15.8 and 20.4 per cent of the test dose within the 4-hr. period. The mean values for boys and girls together were 44.2 mcg. per fasting hour and 358.3 mcg. for the load excretions.

Bay Cliff Health Camp

At the Bay Cliff Health Camp, of the ninety-nine children who came mostly from families of low economic status, some had slight or minor defects of sight, hearing, or speech; others had cardiac involvement or residual effects of poliomyelitis; and all were undernourished. During the stay at camp, they received excellent care and a well-balanced diet, far superior in most cases to that in their homes. The largest variability among the groups of children studied occurred in the initial observations at the Bay Cliff Health Camp, which may have been related to the underprivileged backgrounds of the youngsters. However, the initial thiamine excretion levels (Fig. 1) were generally good, with mean fasting values for boys of 8.0 mcg., and for girls of 8.2 mcg. The range values of 2 to 22 mcg. gave a mean level of 8.1 mcg. for both sexes. The mean load values were 166.1 and 185.2 mcg. for boys and girls, respectively, and the mean level of 172.1 mcg. for both sexes was obtained from figures ranging from 80 to 320 mcg. In 4 hr. the boys excreted 13.4 per cent of the test dose and the girls 15.2 per cent. By the end of the camping period, the children in general had attained a higher level of nutritional performance, with final fasting excretion values (Fig. 1) of 10.3 and 8.7 mcg. for boys and girls, respectively. The mean level for both sexes of 9.7 mcg. was obtained from figures ranging from 4 to 22 mcg. There were increased mean load excretions of 189.4 and 186.9 mcg. for boys and girls, respectively, with range values of 0 to 320 mcg. giving a mean level of 188.6 mcg. The boys returned 14.8 per cent of the test dose of thiamine in 4 hr. and the girls 15.2 per cent. All these values are higher than those observed in any of the other agencies.

During the seven-week period at the Bay Cliff Health Camp, ninety-three of the ninety-nine children increased their body weights by 0.1 to 25.1 per cent, making average weekly gains of 5 to 1191 gm. (19). Consistent with these weight gains were the higher final levels of both fasting and load excretions of riboflavin, probably a direct result of the meat and dairy products available in liberal amounts. The mean fasting excretions of riboflavin increased during the camping period for boys from 41.2 to 49.9 mcg. and for girls from 34.9 to 45.1 mcg. The range values for both boys and girls also increased from 0 to 120 mcg. at the initial observation to 10 to 100 mcg. at the final observation (Fig. 2).

DISCUSSION

Studies of fasting and load test excretions of thiamine in the literature include many for adult subjects, but there are relatively few studies on children with experimental conditions similar to those in the present one. Oldham and co-workers (4) maintained two healthy boys five years old on natural diets containing various levels of thiamine. On a daily intake of 0.7 to 0.75 mg. (approximately 0.50 mg. per 1000 calories), fasting excretion values were 6 and 7 mcg., and on the same basal intake these boys excreted 12 per cent of 1.25 and 1.35 mg. test doses of thiamine.

Papageorge and Lewis (10) found 1-hr. fasting values for thiamine of sixty-three normal young adults ranging from 0.7 to 36.0 mcg., with a mean value of 10.1 mcg., and concluded that 4 mcg. appeared to be the "critical" level of fasting-hour excretions of thiamine. These workers gave a 1-mg. oral test dose to twenty of the subjects and reported percentage returns ranging from 3.2 to 15.0, with a mean of 8.6 mcg. in 4 hr. Oldham, Davis, and Roberts (32) administered various levels of thiamine to twelve healthy young women in an experiment covering approximately eight months. For forty-one days at an intake of 0.51 mg. thiamine per 1000 calories, approximately the level recommended by the Food and Nutrition Board, the 1-hr. fasting values of six subjects ranged from 2 to 12 mcg., averaging 6 mcg. However, after a special supple-

mentation for two weeks, in the last experiment for twenty days at a thiamine intake of 0.54 mg. per 1000 calories, the fasting excretion rose to an average of 10 mcg., ranging from 6 to 16 mcg. In 4-hr. excretion tests, the response to a 1-mg. load dose of thiamine rose from 7.3 to 10.8 per cent when the vitamin was increased from 0.51 to 0.54 mg. per 1000 calories, respectively, so that these workers believe tissue saturation had not been reached on the thiamine intake of 0.51 mg. per 1000 calories. They suggest the minimum daily intake of thiamine for young women should be 1 mg., regardless of caloric intake, and that the thiamine-calorie ratio, especially with a low-calorie diet, is not a satisfactory means of establishing thiamine requirements.

Comparison of fasting-hour excretion levels of thiamine in the present study with those from the literature indicates that while only the children at Bay Cliff Health Camp and the Holy Family Orphans' Home approached the level of 10 mcg. obtained with adults (32), all the groups except St. Joseph's Home compared favorably to the 6-mcg. excretion value for young boys (4).

Among the same children under similar conditions of study, results for the riboflavin excretion tests were not systematically consistent and did not always reveal trends similar to those observed in the thiamine studies. However, the mean fasting and load excretions of riboflavin were 45.2 and 37.8 mcg. and 351.4 and 344.4 mcg., respectively, for boys and girls. While the results were in the same direction as those for thiamine, the boys showing higher riboflavin excretions than girls, there were large variabilities which reduced the significance of the values (Tables 6 and 8). As with thiamine, there was a tendency for the boys to sustain a higher fasting excretion of riboflavin above thirteen years than the girls.

In their study on two boys, Oldham *et al.* (4) obtained 1-hr. fasting excretions of 9 mcg. on an intake of 0.7 to 0.72 mg. riboflavin daily, and at the same intake they reported responses of 17 and 20 per cent following test doses of 0.53 mg. of riboflavin in the 4-hr. excretions for the two subjects. This intake level is less than two-thirds of the 1.2-mg. allowance recommended in 1948 by the Food and Nutrition Board (1) and is approximately one-fourth the average intake of this vitamin by four children on a weighed dietary survey at the Holy Family Orphans' Home (27). The fasting excretion of 9 mcg. observed by Oldham *et al.* (4) on an intake of 0.7 mg. is roughly one-third to one-fifth the mean value for the five institutions in the present study. On an intake of 0.07 mg. to 0.09 mg. of riboflavin daily, however, Najjar *et al.* (33) reported similar 1-hr. mean fasting values of 12 mcg. for twelve normal boys from ten to sixteen years old who had consumed a synthetic diet for twelve weeks. These workers attributed the relatively high excretion of riboflavin in their study to the utilization of the intestinally-synthesized vitamin.

At an intake of riboflavin from 0.28 mg. to 0.63 mg. per 1000 calories per day, Davis, Oldham, and Roberts (34) observed 1-hr. fasting excretions by twelve normal young women of from 6 to 13 mcg., averaging 11 mcg. In a study of riboflavin excretions of twenty college women on self-selected diets, Brewer *et al.* (11) reported 1-hr. fasting excretions of 1 to 40 mcg., with an average of 20 mcg. for eighteen subjects. After a 3-mg. test dose of riboflavin, these subjects excreted from 0.26 to 1.72 mg. of the vitamin in 4 hr., with an average of 0.82 mg. (27 per cent of the test dose).

SUMMARY AND CONCLUSIONS

Health, as defined in the constitution of the World Health Organization (35), is a state of complete physical, mental, and social well-being—not merely the absence of disease or infirmity. Since thiamine and riboflavin form an essential part of the enzyme systems underlying growth and metabolism, they should be provided in ample amounts in a food intake that is adequate in all other respects. It is especialiy important for the child to have a generous intake to provide for increased tissue formation, accelerated metabolic activities, and physical activity.

The measurement of nutritional adequacy of intakes of these vitamins is complicated by the fact that disagreement exists regarding the definition of adequacy. Whether it is justifiable to regard an intake as adequate which merely prevents the appearance of clinically-recognizable deficiency symptoms is still questionable, especially for children. There are innumerable factors, such as augmented metabolism, faulty assimilation, the quantities and ratios of carbohydrate, fat, and protein in the diet, and the activity of the subject which affect the individual's requirement for these vitamins. For these reasons, any levels set up as standards of dietary adequacy can be approximations only.

The recommended allowances compiled by the Food and Nutrition Board of the National Research Council, which represent levels of intake which are believed to provide ample amounts of nutrients for all individuals in a group, not merely the average quantities necessary to prevent symptoms of deficiency, have been used as criteria of adequate intakes. Based on these allowances, many dietary surveys have indicated that deficient intakes of thiamine and riboflavin are widespread in various sections of this country. However, clinical examinations and experimental studies of the intakes, blood levels, and excretions of these vitamins have failed to support much of such evidence of deficiency. Definite deficiency is easy to diagnose clinically, but it is relatively rare in this country. The borderline deficiencies are more important because of their

possible prevalence, but are extremely difficult, frequently impossible, to detect by medical examination, and most investigators rely on laboratory determinations of levels of thiamine and riboflavin in body fluids to judge nutritional status with respect to these vitamins.

In the present study determinations of thiamine and riboflavin in 1-hr. fasting samples of urine and the recovery from urine excreted during 4 hr. of load test doses of 1 mg. of each vitamin were employed to evaluate the nutritional status of groups of children living under different environmental conditions. Both tests seemed to have relative merit as applied in this study. The thiamine tests were more consistent and revealed specific physiologic trends in relation to age and sex, whereas riboflavin tests were more variable and tended to be less clearly defined. In general, the boys showed higher urinary excretions of thiamine and riboflavin than did girls of similar age, corresponding to their higher basal metabolic rates and greater excretions of preformed creatinine. The higher excretion level sustained by boys coincides with the rate of maturation which is slower in boys than in girls.

Little correlation was noted between fasting excretions of riboflavin and load test excretions in contrast to the thiamine tests in which much better agreement was observed between 1-hr. fasting excretion values and those following the load dose. As some authors have pointed out, the fasting excretion may reflect primarily the most recent dietary intake of the vitamins. On the other hand, the load test may measure, with reasonably well-nourished subjects, the efficiency of intestinal absorption and kidney excretion as much as it does tissue saturation. Although this study was not designed to test the validity of the 1-hr. fasting riboflavin excretion and the 4-hr. excretion following a load dose for measuring riboflavin nutriture, the results indicate that, in a mass survey, the 1-hr. fasting excretion corresponds more consistently with the riboflavin consumption and nutritional status than does the 4-hr. excretion after the load test.

On the basis of fasting excretions reported in the literature for normal children and adults presumably receiving adequate intakes of riboflavin, the mean fasting values found in the present study would indicate wide variations in results among the institutions and among individuals within each institution. Individuals within a group, although consuming a so-called adequate diet, may not be equally well-nourished with respect to thiamine and riboflavin. Day-to-day variations in excretion occur, as well as wide individual differences in response among children of the same sex and age, living within the same environment. Over and beyond the individual characteristics and physiologic differences of sex and age, the excretion tests agreed with other observations on nutritional status, i.e., with the analagous knowledge obtained from food consumption and medical examination. Although the investigation was not organized to determine dietary requirements of children, the results demonstrated the value of the analyses of excretion in indicating physiologic differences among children owing to age and sex. It also indicated the value of correlating thiamine and riboflavin excretions with dietary intakes and medical findings as a means of characterizing the nutritive status of children.

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Infant Feeding

The "self demand" schedule or, better, the "self-regulating" schedule, does not mean feeding the infant whenever he whimpers or cries; it means feeding the baby whenever he is really hungry. A normal infant who is on an appropriate and sufficient formula does not get hungry sooner than 2 hr. after his last feeding.

In a recent survey conducted by Dr. Gustave Weinfeld among fifty pediatricians residing in Chicago and vicinity the following statistics were made available: Thirty-five stated that babies should be fed whenever they are hungry: seven said no; sixteen advocated some specified limit of time between feedings, but twenty-two believed that there should not be a specified limit of time between feedings; eight stated that babies should be awakened to be fed; thirty-two opposed awakening babies for feedings; sixteen indicated that the self-regulating diet should be discarded when the infant was three months of age, but eighteen said no. This represents a small part of the consensus throughout the country.

It is important to individualize. No two infants are alike. Some compulsive perfectionist mothers are made unhappy and confused with the self-regulating schedule, as they are incapable of assuming the responsibility of determining the time when their babies need to be fed. In these few cases it is better not to insist on a self-regulating schedule. Most mothers welcome the self-regulating (demand) regimen and are happy to continue it for at least three months, by which time most infants have placed themselves on a reasonable schedule. —*From Queries and Minor Notes. J. A. M. A. 143: 779 (June 24), 1950.*

Editorial

MARY deGARMO BRYAN BECOMES SIXTH RECIPIENT OF THE MARJORIE HULSIZER COPHER AWARD

On October 20, at the Annual Banquet of the American Dietetic Association, Mary deGarmo Bryan, Ph.D., became the sixth recipient of the Marjorie Hulsizer Copher Award—the highest honor which the Association bestows.

The Award, made possible by an anonymous gift of $5000 to the Barnes Hospital, St. Louis, in 1944, was established to perpetuate the name of Mrs. Copher in the field of dietetics. Since that time, an additional sum has been added to the original amount, and the interest from the total fund goes each year to the person selected for outstanding work in dietetics by the Executive Board of the American Dietetic Association, on the recommendation of the Awards, Scholarship and Loan Fund Board, as well as on the advice of the Director of Barnes Hospital.

In making the 1950 Award to Mrs. Bryan, Elizabeth Perry, President of the American Dietetic Association, said:

"When this Association gathers to mark its annual milestone of progress, the granting of the Marjorie Hulsizer Copher Memorial Award is always our most solemn yet uplifting and dramatic moment. We then bestow our highest honor upon a member of this Association. But the event is more than acclamation of a member's distinction. In reality these occasions constitute a reaffirmation of our faith in each other, and our common belief in the ideals of our profession as exemplified in the one we honor.

"While symbolic of a member's achievements, this Award has a deep significance to all of us. Its granting momentarily touches us with the lambent glow of nobility of character, of human greatness. In all truth this Award serves as a spiritual ideal toward which we all may direct our hearts and minds, an ideal that transcends materialistic accomplishment.

"Many honors have come to the one we, too, would honor tonight. The outline of her academic and professional attainments may be read in published volumes listing this nation's notables in public life, the arts, and the sciences. Only briefly, therefore, need we recount her many previous honors and distinctions.

"As a very young dietitian, like the woman whose name this Award commemorates, she braved the uncertainties and dangers of World War I to serve in Army hospitals overseas. Returning after two years in France, she was elected by unanimous acclaim the second President of the Association.

Mary deGarmo Bryan

"Without seeming pause, her bright destiny swept her along—to marriage, to the editorship of the *Journal of Home Economics*, to a doctorate at Columbia University, and to a professorship as the Head of the Department of Institution Management, Teachers College. Author, teacher, editor, noted authority on school lunch and restaurant food services, homemaker, beloved advisor and friend to hundreds of her associates and students—in every phase of her selfless and busy life, the lives of countless others have been illumed and bettered by her presence.

"When we think of her, even after great distance and time have intervened, a vivid picture comes to mind and brightness enters a gloomy day like golden sunshine. When we try to describe her, words like charm, grace, beauty, buoyancy, wit, intelligence, and above all, integrity, tumble out in our enthusiastic appraisal. For 'Whatever she does, wherever she bends her steps, grace silently orders her actions and follows her movements.'[1]

"We honor Mary deGarmo Bryan tonight and we in turn are honored by her presence."

[1] Tibullus. Book 4,2,7.

PRESENTATION OF THE MARY SWARTZ ROSE FELLOWSHIP FOR 1950

As announced in the October issue of the JOURNAL, the Awards, Scholarship, and Loan Fund of the American Dietetic Association selected as recipient of the Mary Swartz Rose Fellowship for the second year Pearl Jackson who is working toward a doctor's degree at Iowa State College, Ames. The Fellowship, established in 1949 through a grant from the Nutrition Foundation, Inc., is granted to the person who in the opinion of the Awards, Scholarship and Loan Fund Board best meets the provisions set up for candidacy. It is named in honor of Mary Swartz Rose, one of the truly great pioneers in the field of dietetics, to symbolize the ideals of dietitians.

This year's presentation of the Mary Swartz Rose Fellowship was made at the Annual Banquet of the American Dietetic Association in Washington by Dr. Grace MacLeod, Professor Emeritus, Teachers College, Columbia University, who was a close associate of Mrs. Rose during her lifetime. Her presentation read:

"I feel greatly honored to have been chosen to present the Mary Swartz Rose Fellowship of the American Dietetic Association on this, the tenth anniversary of the meeting at which Mrs. Rose was made an honorary member of the Association, a tribute which touched her deeply and gave her keenly felt pleasure. It was the last of many honors bestowed upon her during her lifetime, the first of which came to her in 1907 when, after two years at Teachers College as student and assistant in the department called 'Household Arts' at that time (now Home Economics), the late Dean Emeritus of the College, James Earl Russell, chose her as the recipient of a two-year traveling fellowship to study with Dr. Mendel at Yale. Nothing, I feel sure, would have given her greater happiness than to have named for her a fellowship affording similar opportunity to able young women for graduate study and research in nutrition or allied fields.

"In 1909 after two years at Yale, she returned to Teachers College with the degree of doctor of philosophy in physiological chemistry and started the first college department of nutrition in this country. If we stop for a moment to consider the fact that nutrition was recognized as a separate science only in the late 1890's, we get some realization of what pioneering this was on the part of Mrs. Rose and what vision the Dean had for the future of home economics education. She served successively as Instructor, Assistant and Associate Professor of Household Arts until 1921 when she was promoted to full professorship with the title Professor of Nutrition, the first such professorship in any American college or university.

"Many other firsts and honors came to Mrs. Rose during her lifetime—for example, election to Sigma Xi while at Yale, the first woman to be so honored by the Yale chapter; appointment as the only woman representative from the United States on the Nutrition Commission of the Health Organization of the League of Nations; the first woman to serve as President of the American Institute of Nutrition; the first woman to receive the Award of Distinction of the Associated Grocery Manufacturers of America; appointment at the time of World War I as Deputy Director of the Bureau of Food Conservation of the New York State Commision and Federal Food Board; the invitation to membership in the Foods Committee, now known as the Council on Food and Nutrition of the American Medical Association.

"With all these and many other activities in addition to her college teaching and research, it is small wonder that Dr. Mendel once said of her in speaking of her accomplishments, 'You know Arnold Bennett wrote a book about *How to Live on Twenty-four Hours a Day*. Well, Mrs. Rose has beaten him—she has found a twenty-fifth hour.'

"Always her aim was to work with maximum efficiency and real economy of time and energy. She made every minute count whether at work or play. The definition of a genius as one who has an infinite capacity for hard work fitted her perfectly, and she infected students and associates with her zeal. As I have said elsewhere of her, she was like a catalytic agent bringing about productive reactions in those with whom she came in contact without herself losing any reactivity—rather, her energy seemed to be increased thereby. Her husband, the late Dr. Anton R. Rose, to Mrs. Rose's great amusement, once epitomized the boundlessness of her energy when he said, in a discussion of the question of careers for married women, 'Well, I'm glad my wife has a career. I shouldn't like to have her expend all the energy she has on just me.'

"Many of you here tonight have used one or more of Mrs. Rose's books as texts in the process of being educated and also know of the long list of publications, both scientific and popular, of which she was the author. One of her most absorbing interests was that of making practical application of the research findings in nutrition for the betterment of health. She was particularly interested in finding out how nutrition might best be taught in the elementary schools, believing that training in good food habits is quite as important for children as that in any of the common school subjects.

"She was a great pioneer and inspiring leader. Those of us who had the privilege of knowing her, whether as student, friend, or professional associate, will always be grateful, and it is for us to acquaint the younger members of our profession with her achievements that they may be inspired to follow in the pathway she blazed for us. The Mary Swartz Rose Fellowship of this Association will afford opportunity for doing this as it is presented year by year."

Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Hermia M. Handt, Veterans Administration Hospital, Hines, Illinois; Pauline Kegereis, The Children's Mercy Hospital, Kansas City, Missouri; Berdena Rosenow, University of Kansas Medical Center, Kansas City, Kansas; Mildred Bonnell and administrative interns, University of Washington, Seattle; and the Journal staff.

THE AMERICAN JOURNAL OF MEDICINE

Vol. 9, August, 1950

* The present status of potassium therapy. J. R. Elkinton and R. Tarail. —p. 200.

Potassium Therapy. Potassium deficiency is related to an obligatory and persistent excretion of potassium in the absence of intake of the ion, and under certain circumstances to the presence of bicarbonate excess or alkalosis. Such deficiency is found in starvation, dehydration, gastrointestinal disturbances, and diabetic acidosis. It may also be induced in Addison's disease by overtreatment with desoxycorticosterone and in other conditions by the administration of ACTH or cortisone. Specific signs and symptoms are usually not present. The diagnosis depends on recognition of etiologic circumstances and is aided by the finding of abnormally low concentrations of serum potassium. Dosage of administered potassium may range in the adult from 30 to 150 milliequivalents per day, the amount and duration of therapy being determined empirically. The cardinal danger of potassium therapy is cardiac arrest due to elevation of the serum potassium concentration. A serum potassium level above 5.3 milliequivalents per liter or renal insufficiency with oliguria are contraindications to administration of the ion.

THE AMERICAN JOURNAL OF NURSING

Vol. 50, September, 1950

*Feeding the child with cerebral palsy. M. Abel.—p. 558.

Feeding the Child with Cerebral Palsy. This article discusses complications in maintaining good nutrition in children with cerebral palsy. Emotional tensions of parents, neuromuscular difficulties of the children, inefficient absorption of food, together with increased energy expenditure, make it difficult to provide optimum nutrition. This situation accounts for the emaciation of many children with cerebral palsy. The author mentions foods needed in extra amounts and recommends practical ways of including them in the diet.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 40, August, 1950

* Relationships between nutrition and pregnancy as observed in recent surveys in Newfoundland. G. A. Goldsmith.—p. 953.
* Problems and methods in nutrition services for pregnant women. B. S. Burke and S. B. Kirkwood.—p. 960.

Vol. 40, September, 1950

School lunches: their nutritive value and relation to the health and diet of children. M. L. Hathaway, F. L. Meyer, and S. F. Adelson.—p. 1096.
* Nutrition and dietary habits of aging women. M. A. Ohlson, L. Jackson, J. Boek, D. C. Cederquist, W. D. Brewer, and E. G. Brown.—p. 1101.

Nutrition and Pregnancy. Data obtained in recent nutrition surveys in Norris Point, Newfoundland, suggest that when the dietary intake of certain nutrients is low, pregnancy leads to an increase in the prevalence and severity of nutritional deficiency. Signs suggesting B-complex deficiency were observed more frequently in recently pregnant women than in other population groups in 1944. Between 1944 and the time of the second study in 1948, the enrichment of flour with B vitamins in a program to improve the nutrition of the populace had been put into effect. The group showing the highest incidence of nutritional deficiency in 1944, namely, women who had had recent or frequent pregnancies, showed the largest benefit from these measures. The improvement in health as indicated by certain vital statistics provides corroborative evidence of the value of the nutrition program. Of particular interest is the concurrent reduction in infant mortality and stillbirth rates as nutrition improved.

Nutrition in Pregnancy. In a study of 216 pregnant women at the Boston Lying-In Hospital, a statistically significant relationship was found between the general mean dietary rating for pregnancy and the incidence of pre-eclampsia. Among the women whose diets were "poor" to "very poor," the incidence was 44 per cent while no toxemia occurred among the women whose diets rated "good" or "excellent"; the incidence of toxemia among the women whose diets were rated "fair" was 8 per cent. A large percentage of the "poorest" infants—those who were stillborn or who died shortly after birth, or who were premature or functionally immature—were in this poorest diet group and a considerable number were born to toxemic mothers. It appears that control of the nutritional state of the pregnant women is an important factor in relation to the prevention and treatment of toxemia. The plan of the nutrition consultation service is explained.

Nutrition of Aging Women. A minimum of 1600 to 1800 calories per day was required for equilibrium of protein, calcium, and phosphorus in balance studies on fourteen women under seventy years. Three of the four women over seventy were able to maintain body reserves on approximately 1500 calories. Thus, it appears that total food needs may be lower after seventy, due to a decrease in the number of activities and interests.

INDUSTRIAL AND ENGINEERING CHEMISTRY

Vol. 42, September, 1950

* Milk proteins and lactose from dried skim milk. S. R. Hoover and E. L. Kokes.—p. 1910.

Protein and Lactose from Dried Skim Milk. A process has been developed for recovering protein and lactose from dried skim milk. The process consists of a four-stage countercurrent leaching of the powdered solid with five times its weight of 0.25 per cent sodium chloride at *p*H 4.1. The recovered protein consists of the casein and whey protein, heat-coagulated during the drying process, thus representing essentially the protein of the whole milk. The process is described in detail.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 144, September 2, 1950

*Deficiencies of the fat-soluble vitamins. J. B. Youmans—p. 34.
*Dermal loss of iron. Editorial—p. 47.

Vol. 144, September 9, 1950

*Diabetic coma. R. D. Story and H. F. Root—p. 86.

Vol. 144, September 23, 1950

Hypervitaminosis A, report of a case. T. C. Wyatt, C. A. Carabello, and M. E. Fletcher.—p. 304.
* Deficiencies of the water-soluble vitamins. J. B. Youmans.—p. 307.

Vol. 144, September 30, 1950

* Deficiencies of the water-soluble vitamins. J. B. Youmans.—p. 386.

Deficiencies of the Fat-Soluble Vitamins. A resumé is given of the nutritional deficiencies caused by insufficient amounts of the fat-soluble vitamins. The discussion deals with the symptoms of deficiencies of vitamins A, D, E, and K, as well as possible causes.

Dermal Loss of Iron. From the review of current literature, it was concluded that *minute* quantities of iron are lost by sweating and that dermal loss of iron is primarily from desquamation.

Diabetic Coma. Adequate insulin dosage and use of isotonic saline solution in early phases of diabetic coma are usually satisfactory. In most cases, tissue requirements for potassium can be supplied by early feedings of liquids and foods that contain high concentrations of potassium. The use of dextrose in the early treatment of diabetic coma is condemned. Any anti-ketogenic effect of dextrose administration is far out-weighed by the marked dehydration it produces.

Deficiencies of Water-Soluble Vitamins. Articles from two consecutive issues of the *Journal of the American Medical Association* present a summary of present knowledge of deficiencies of the water-soluble vitamins. Various aspects of thiamine, riboflavin, niacin, and ascorbic acid deficiencies are considered.

THE JOURNAL OF AVIATION MEDICINE

Vol. 21, August, 1950

* Effect of repeated exposure of human subjects to 18,000 feet without supplemental oxygen, to hyperventilation, and to 35,000 feet with 100 per cent oxygen for one hour, on ascorbic acid excretion and plasma level and on urine *pH*. L. R. Krasno, J. H. Cilley, J. H. Boutwell, A. C. Ivy, and C. J. Farmer.—p. 283.

Physiologic Effects of High Altitudes. Eleven medical students ranging from twenty to twenty-six years of age were placed on a diet containing approximately 91 mg. ascorbic acid daily, the diet being complete in all respects according to present knowledge. The repeated exposure to an altitude of 18,000 ft. without oxygen caused a decrease in the daily urinary excretion of ascorbic acid from an average of 33.6 mg. to an average of 12 mg. The plasma level was decreased from an average control level of 0.73 mg. per 100 cc. to an average level of 0.58 mg. per 100 cc. during the last three weeks of exposure. Increased capillary fragility occurred in one subject when the plasma level was reduced to 0.35 mg. per 100 cc. and the daily intake was 91 mg. The hyperventilation caused a retention of ascorbic acid during that period. When the subjects received a daily intake of ascorbic acid of 91 mg. and were exposed to 18,000 ft. without oxygen supplementation, a gradual depletion of ascorbic acid occurred. The evidence indicates that the depletion was due to increased utilization. Repeated exposure to 18,000 ft. without supplemental oxygen did not affect the urinary output of thiamine, riboflavin, alpha-ketoglutaric acid, pyruvic acid, or acetone bodies. A hyperexcretion of ascorbic acid occurred during exposure to 35,000 ft. while breathing 100 per cent oxygen on a daily intake of 141 mg. ascorbic acid.

THE JOURNAL OF NUTRITION

Vol. 42, September, 1950

* Nutrition survey and tests in Bataan, Philippines. H. B. Burch, J. Salcedo, Jr., E. O. Carrasco, C. L. Intengan, and A. B. Caldwell.—p. 9.
* Observations on an unknown dietary factor essential for human growth. S. E. Snyderman, L. E. Holt, Jr., R. L. Nemir, L. P. Guy, R. Carretero, and K. C. Ketron.—p. 31.
The excretion of amino acids in normal and undernourished human subjects following a single infusion of an amino acid preparation. S. Levey, E. D. Hoganson, J. E. Harroun, and C. J. Smith.—p. 71.
* The prevention of experimental tooth decay by tube-feeding. O. W. Kite, J. H. Shaw, and R. F. Sognnaes.—p. 89.
* The effect of fluoride and grapefruit juice on the etching of teeth. A. J. Spencer, Jr. and L. N. Ellis.—p. 107.

Survey in Bataan, Philippines. A previous clinical survey revealed that polished rice dominates the diet in Bataan, that two-thirds of the families use meat about once a week, that vegetables are eaten sparingly, and that fish is consumed by 90 per cent of the population six or seven times a week. Typical diets in the rural Philippines are, therefore, likely to be deficient in fat, animal protein, calcium, iron, carotene and vitamin A, B-complex vitamins, and ascorbic acid. The extremely high consumption of refined rice indicates a low level of thiamine intake even though clinical symptoms of beriberi may not be apparent. The predisposition of pregnant women, nursing mothers, and infants to beriberi shows clearly the results of such a diet. The examination of 202 persons by microchemical methods revealed low blood and urinary thiamine levels. Evidence of multiple dietary deficiencies was found in the levels of other nutrients in blood or serum. Widespread anemia was evident from the low hemoglobin and hematocrit values, probably as a result of chronic deficiencies of iron and several members of the B-complex. Serum protein levels fell in the lower range of normal. The lowest levels occurred in the frank beriberi group of pregnant women. Serum vitamin A levels were normal. Serum ascorbic acid and carotene concentrations were very low, apparently reflecting a low consumption of fresh fruits and vegetables. The lowest ascorbic acid levels were found in the group of lactating women.

Unknown Factor for Human Growth. The subjects of this report were infants and young children varying from three and one-half to forty months of age and weighing from 4.0 to 12.7 kg. All were kept on metabolism frames for five days a week to evaluate B vitamin requirement by urinary excretion data. The diet, a purified ration, was so constructed as to provide 100 calories per kilogram. All vitamins were supplied as supplements. On the purified ration, the infants exhibited a deficiency syndrome consisting of a cessation of weight gain unaccompanied by any other symptoms or signs. A normal infant diet brings about an immediate weight gain. The existence of an unknown factor contained in the normal diet and necessary for human growth has been recognized. This factor may be identical with vitamin B_{12} or the "animal growth factor."

Tube-Feeding and Tooth Decay. When intact desalivated, caries-susceptible albino rats were fed adequate amounts of a caries-producing diet by stomach tube they did not develop tooth decay. In contrast, all but one of the intact litter mates and all of the desalivated litter mates which consumed the same diet orally developed dental caries. Histologic examination showed that the molar teeth of both groups were surrounded by a great abundance of microorganisms. In the control animals, the microorganisms were in direct contact with the tooth surfaces; in tube-fed rats these were separated from the enamel surfaces by a thick organic membrane and by foreign matter which was firmly impacted in the fissures. The suggestion is made that tooth decay is prevented in caries-susceptible rats when the direct effects of food in the oral cavity are eliminated.

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Etching of Teeth and Fluoride. The lower molars of young male rats were found to be strongly etched after the animals drank commercially canned grapefruit juice as the sole beverage during an eleven-week period. The erosion was due to the acidity and not to the sugar content, since no erosive action was found when sucrose-water or neutralized grapefruit juice became the fluid intake. There was about 60 per cent protection when 50 p.p.m. (parts per million) of the fluoride were added to the grapefruit juice.

THE JOURNAL OF PEDIATRICS

Vol. 37, September, 1950

* Dehydrated banana in the dietetic management of diarrheas of infancy. J. H. Fries, N. J. Chiara, and R. J. Waldron.—p. 367.

Dehydrated Banana in the Dietetic Management of Diarrheas of Infancy. Forty children, ranging in age from one month to one year, were observed on the wards of the Kings County Hospital in Brooklyn, during the summer of 1949. The predominant symptoms were frequent loose stools, fever, abdominal distress, convulsions, and toxicosis. Alternate patients admitted to the hospital with these findings were placed on a trial regimen incorporating dehydrated banana flakes. The other twenty children were treated according to usual hospital practice and served as a control group. Data are given to show that the trial group treated with the dehydrated banana flakes recovered more rapidly than did the control group. Gains in weight during the acute phase of the illness were noted more frequently. It was observed that dehydrated banana was accepted willingly, served to satisfy hunger, and was well tolerated.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 243, August 3, 1950

*Observations on the management of hypertension by the Kempner rice diet. C. R. Williamson.—p. 177.

*Vitamin B_{12} and pernicious anemia. M. B. Strauss.—p. 187.

Vol. 243, August 10, 1950

*Vitamin B_{12} and pernicious anemia. M. B. Strauss.—p. 222.

*Hypertension. D. Loofbourow and R. S. Palmer.—p. 257.

*Hypertension. D. Loofbourow and R. S. Palmer.—p. 285.

Vol. 243, September 7, 1950

* The milk factor in the transmission of mammary carcinoma. J. Berner.—p. 375.

* The "milk factor" in carcinoma of the human breast. H. W. Horne.—p. 373.

Management of Hypertension by the Rice Diet. Observations on sixty-seven patients with diastolic blood pressures of above 100 are reported. In thirty-seven of these, diastolic hypertension was not sustained during a control period of three weeks. Ten of the thirty patients with sustained diastolic hypertension were not placed on the rice diet either because of unwillingness to start the regimen or because of the presence of severe complications. Eleven of the twenty patients placed on the rice diet followed the regimen for six or more weeks. Four of these demonstrated significant decreases in diastolic blood pressure. The addition of salt-free protein and fat to the diets of three of these patients did not result in any change in blood pressure or symptomatology. The administration of sodium chloride without the knowledge of the patients was followed by a rise in systolic blood pressure.

Vitamin B_{12} and Pernicious Anemia. There appears to be little doubt that pernicious anemia is a nutritional deficiency disease conditioned by the state of the gastric secretion, and it is likewise evident that this and related clinical syndromes may be dependent upon a lack in the diet or upon faulty absorption or utilization of one or more dietary factors. A well balanced, nutritious diet is advisable for patients with pernicious anemia, but no other special dietary regimen is indicated.

Treatment of Hypertension. The dietary treatment of hypertension should utilize weight reduction, limit protein in the presence of significant renal impairment and, in the opinion of the authors limit fat from adult years onward. Probably salt should be drastically reduced for a therapeutic trial at least if hypertension is more than moderate in degree. The reduction of sodium claims serious attention because of its relation to renal and adrenal function. Resourceful use of dietary treatment in hypertension is most helpful, but remains a negative approach like the dietary treatment of diabetes before insulin.

Mammary Carcinoma. As early as 1930, Bittner and Little at Jackson Memorial Laboratory, Bar Harbor, Maine, reported that in mice "breast tumor development is dependent primarily on a breast cancer producing influence which can be transmitted through the milk." Therefore, in mice this form of cancer can be exterminated by the simple measure of foster nursing of one single generation. In this article Berner summarizes the investigation concerning this agent and discusses the implications regarding the prevention of mammary cancer in women. No milk factor has been demonstrated for breast cancer in man, and there is no evidence that the human situation is analogous to that in mice. However, Berner believes that women with family histories of breast tumors should avoid giving their milk to their children.

Milk Factor in Carcinoma of Human Breast. In this study it appears that a woman may develop cancer of the breast without ever having received any human breast milk. Thus, withholding human milk from a large number of female babies would not eliminate cancer of the breast. Whether such an experiment might reduce the incidence of breast cancer remains to be discussed.

PUBLIC HEALTH REPORTS

Vol. 65, July 21, 1950

*School lunches from a health standpoint. R. E. Butler.—p. 919.

Vol. 65, August 18, 1950

* Bacterial efficiency of quaternary ammonium compounds. C. T. Butterfield, E. Wattie, and C. W. Chambers.—p. 1039.

Vol. 65, September 15, 1950

Availability of fluorine in sodium fluoride vs. sodium fluosilicate. F. J. McClure.—p. 1175.

School Lunches. Physical examinations of about 340 children in two schools near Washington, D. C., one serving lunches and the other, a control school, failed to reveal any significant amount of malnutrition in either school. Study revealed the family dietary pattern to be fairly good with some exceptions which are common to our population. Perhaps the children who went home for lunch or who carried it with them might have had as good a lunch as that provided by the school. Complete participation in the school lunch program for the entire school year would provide only about 17 per cent of the meals for the year. If the "no school lunch" group were deprived of their lunch entirely, it would probably take a considerable period of time before the two groups could be differentiated on a physical basis.

Bactericidal Efficiency of Quaternary Ammonium Compounds. The general characteristics of the quaternary ammonium compounds and various test methods described in the literature for the determination of their bactericidal efficiency are reviewed. One test procedure is described for use under operating conditions, of these ammonium compounds and other chemical agents proposed for use as bactericides. Using this procedure with *Escherichia coli* as the test organism, the bactericidal efficiency of eleven quaternary ammonium compounds which are used as active agents in forty commercial sanitizers has been determined. Tests for residual active agents were also made. The results of these tests are reported.

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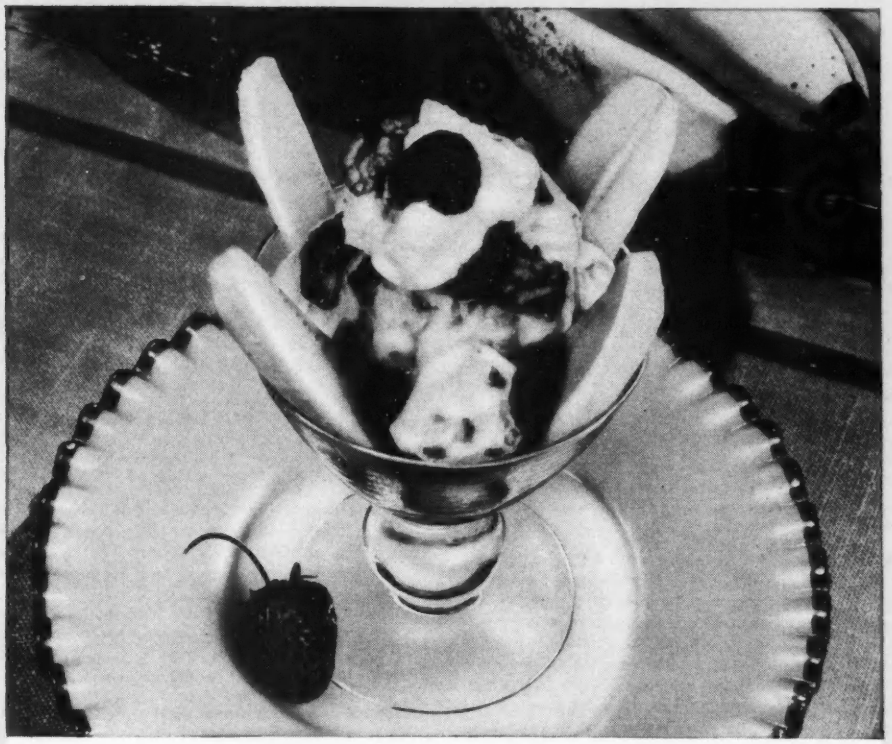
Banana Sundae



For sweetness-for digestibility-fully ripe bananas.... yellow peel flecked with brown

All these plusses.... fruit sugars vitamins, minerals

BANANA SUNDAE

1 ripe banana*
1 ball or scoop ice cream
2 tablespoons chocolate or fruit syrup
2 tablespoons crushed fruit or preserves
Whipped cream
Nuts, whole or chopped
Cherries or berries

Use fully ripe banana . . . yellow peel flecked with brown

Peel and quarter banana by cutting once lengthwise and once crosswise. Arrange banana pieces opposite each other in a sherbet dish with cut sides of the banana facing inside. Place ice cream in dish between banana pieces. Cover ice cream with syrup and crushed fruit or preserves. Garnish with whipped cream, nuts, cherries or berries. Makes 1 Banana Sundae.

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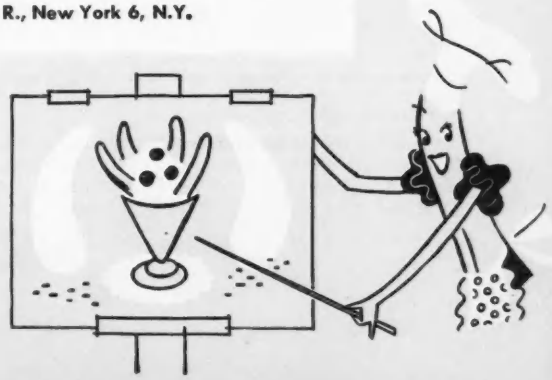
Colorful. flavor-full! Easy to make!



AMERICAN RESTAURANT MAGAZINE

Vol. 34, August, 1950

* What's your reputation on vegetables? J. A. Cline.—p. 41.
Manpower development.—p. 74.

Vol. 34, September, 1950

Restaurant plumbing is keeping pace with other comfort features. W. W. Brooks.—p. 38.
* What's your reputation on vegetables? J. A. Cline.—p. 41.
* Know foods better. G. W. Watson.—p. 44.

Vegetable Cookery. In the first of a series of two articles, the essential points on fresh vegetable buying, storing, and cooking are covered. Some of the topics discussed are: changes in quality caused by "ripening" after gathering, factors affecting quality and quantity, methods of preserving quality by proper storage, suggestions for serving vegetables uncooked, and methods of cooking vegetables to improve or at least not injure the appearance, texture, flavor, and nutritive value. In the second article flavor, nutritive losses, cooking methods, and seasoning are discussed.

Food and Psychology. Presented here are some of the psychological factors which have a bearing on the production, preparation, serving, and consumption of food. An explanation is given of how food likes develop. The author points out, too, the effect of color, attractive equipment and surroundings, cleanliness, and advertising.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 9, September, 1950

Catering service on the college campus. H. W. Bounds.—p. 47.
* Precosting menus. J. Martin.—p. 48.

Precosting Menus. When food service is set up on a nonprofit basis, the problem may be met of selling food at prices that do not give the necessary return. In instances where prices cannot be raised, it is important to precost menus. There are two basic steps in this process: (a) determining costs of meats, vegetables, and other products that are trimmed or peeled prior to cooking—where there is a difference between edible weights and purchased weights; and (b) setting up the recipe on cost forms so that each item on the menu reveals its true cost.

FOOD INDUSTRIES

Vol. 22, September, 1950

* Get quicker insect counts on raw foods. P. E. Gilbert and W. F. Filz.—p. 44.
Continuous mixing yields more and better cakes. C. Denton.—p. 51.
Vacuum treatment curbs browning of apple slices. P. D. Rodgers, J. B. Wegner, and B. H. Baer.—p. 64.
Frozen food distribution. G. A. Fitzgerald.—p. 65.
Refine pear-canning waste for use as syrup base. A. M. Neubert, D. W. Graham, O. E. Ohlson, and C. L. Beardsley.—p. 82.

Insect Counts on Raw Foods. A new method for the detection of worm and insect contamination of raw foods prior to processing has been developed at the Oregon Agricultural Experiment Station. The advantages of the new method are listed, and the technique is described.

HOSPITAL MANAGEMENT

Vol. 70, September, 1950

*Use this checklist in evaluating or planning your dietary department.—p. 104.
What is a good hospital breakfast?—p. 108.

Checklist for Dietary Department. This article has been coordinated with two previous articles on "Planning, equipping and appraising hospital dietary facilities." A series of questions to be used as a checklist is found under each of the following headings: receiving and storage; pre-preparation of vegetables, fruits, and meats; food preparation unit (meat and vegetable preparation, baking, salads and other cold foods); diet kitchen; serving unit (patients' serving unit, employees' serving unit; employees' dining unit); dishwashing; pot and pan washing; housekeeping facilities; office space; and employee facilities.

HOSPITALS

Vol. 24, September, 1950

* Therapeutic diets can be made more acceptable to patients. G. G. Taylor.—p. 105.

The Therapeutic Diet. Today in modern hospitals, special diets are modifications of the normal diet. Here, particular attention is given to the low-sodium diet. This diet requires ingenuity to plan and prepare so that it will be acceptable to the patient. Diets of 1 gm. salt or less will be inadequate in some food essentials, and therefore length of usage should be as short as possible. The author has given suggestions of food preparation and lists of spices that may be added to give zest to salt-free food. Spices suggested are: chives, parsley, bay leaves, thyme, marjoram, sage, oregan, basil, and rosemary.

HOTEL MANAGEMENT

Vol. 58, September, 1950

* Equipment maintenance manuals. A. H. Clawson.—p. 68.

Equipment Maintenance Manuals. Charts are given on the following: (a) how to clean a gas stack oven; (b) how to clean an electric stack oven; (c) how to clean a bench-type manual can opener; and (d) how to operate a bench-type manual can opener.

INSTITUTIONS

Vol. 27, September, 1950

*Look to equipment for first aid in peak-time operation.—p. 2.
Institutions liquidate garbage problem with new disposers.—p. 3.
* Preventive measure curtails china, glassware losses.—p. 16.
New, fast method takes puttering out of pastry making.—p. 42.
Rodent, insect eradication . . . important to sanitation. W. H. Haskell.—p. 122.
Continental preparation for cuisine careers.—p. 145.

Equipment. In a recent address to the American Home Economics Association, Bruce B. Blickman pointed out some of the new details in fabricated food service equipment to make more efficient operation and better sanitation. Some of the basic features are described.

China and Glassware. A loss and destruction form has been devised for use in checking on breakage of glassware and china. It includes a statement to employees as to the purpose of the form and then follows with some precautionary advice for avoiding breakage. The form calls for information as to type of item broken, date and time the breakage occurred, and the name of the employee submitting the report. A floor plan of the restaurant is included, on which the employee is requested to mark the spot where the accident causing breakage occurred.

THE MODERN HOSPITAL

Vol. 75, September, 1950

* Will china take a back seat? K. VanCleft.—p. 112.

Plastic Dishes vs. China. The advantages of plastic dishes are presented. Precautions are given for the care of plastic, and the disadvantages of its use are pointed out also. Since treatment of plastic dishes differs somewhat from that for china, a list of do's and don'ts is given

Say *Merry Christmas* to Your Patients

...with this quick-easy QUAKER FRUIT CAKE!

Christmastime can be pretty bleak for hospitalized patients. And any home-like touch means so much to them.

With this easy-to-make Quaker Fruit Cake, you don't go to a lot of work but you do bring a "festive feel" to your holiday menus.

Your patients will love this fruit cake for Quaker Oats gives it a delicate, moist texture and piquant, nut-like flavor that "tastes like home." And you'll be delighted with the ease with which it's made!

So why not make this holiday as pleasant as possible for *your* patients? You can—*easily* and economically—when you top off your holiday meals with delicious Quaker Fruit Cake.

QUAKER FRUIT CAKE

Dessert
50 servings
Total Weight of Batter: 10 lb. 12 oz.
Portion: 2 slices

INGREDIENTS	AMOUNT	WEIGHT	COST
Brown Sugar	1½ quarts	3 lbs.	
Water	1½ quarts	4 oz.	
Shortening	½ cup	1 lb. 14 oz.	
Raisins	1 quart		
Cinnamon	1 tablespoon		
Cloves	1 teaspoon		
Nutmeg	1 teaspoon		
Flour, sifted	1½ quarts	1½ lbs.	
Soda	2½ teaspoons		
Salt	2 teaspoons		
Candied Cherries, chopped	2½ cups	1 lb.	
Quaker Oats (quick or old fashioned, uncooked)	3 cups	½ lb.	

Directions

1. Boil brown sugar, water, shortening, raisins and spices together for 5 minutes. Cool.
2. Sift together flour, soda and salt into mixer bowl. Add sifted dry ingredients to cooled liquid, beating at low speed for 1 minute.
3. Add cherries and rolled oats, beating at low speed until blended, about 15 seconds.
4. Bake in two 10x14-inch greased paper-lined pans in a slow oven (325°F.) about 1½ hours. Cool slightly; remove from pans. Slice and serve.

QUAKER FRUIT CAKE — THE QUAKER OATS COMPANY INSTITUTIONAL KITCHEN

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HOLIDAY HINT:

At Christmas dinner, brighten up each tray with a sprig of holly. Cost is small, trouble is slight... and patients *will* appreciate it!

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News Notes

Army Recruiting. The Chief of the Women's Medical Specialists Corps has announced that special officers have been assigned to the Office of the Surgeon in the Headquarters of the Second, Third, Fourth, and Fifth Army Areas for the purpose of giving information regarding appointment in the Officers' Reserve Corps. Dietitians wishing such information may contact the following officers, who represent the states listed in parentheses:

Second Army—1st Lt. Mary Berteling, Ft. George G. Meade, Maryland (Delaware, Kentucky, Maryland, Ohio, Pennsylvania, Virginia, West Virginia)

Third Army—Capt. Christine Ehlers, Ft. McPherson, Georgia (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee)

Fourth Army—Capt. Martha E. Moseman, Ft. Sam Houston, Texas (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)

Fifth Army—Capt. Evelyn M. Girard, 1660 Hyde Park Blvd., Chicago (Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin)

The First and Sixth Army Area Headquarters do not have WMSC representatives. Therefore, dietitians living in states not listed should write to:

Lt. Col. Eleanor L. Mitchell, WMSC Chief, Dietitian Section, WMSC Division
Office of the Surgeon General, D/A Main Navy Building, Room 2810, Washington 25, D. C.

WHO Regional Offices. General Francois Daubenton of the Netherlands has been appointed Chief of the World Health Organization's Office for Africa. The office will be located in Geneva, Switzerland, until establishment of a regional organization.

At the 13th conference of the Pan American Sanitary Bureau held in Ciudad Trujillo in October, it was voted to continue the headquarters in the United States. The Bureau has had offices in Washington since 1902, and since 1949 has also functioned as the Regional Office for the Americas of the World Health Organization. At the same meeting Dr. Fred L. Soper of the United States was re-elected Director of the Pan American Sanitary Bureau to serve for a period of four years beginning February 1, 1951.

WHO Seminars. The World Health Organization has recently sponsored two seminars in Europe on infant metabolism. The first was held in Leyden, the Netherlands, from October 16 through 30, while the second took place in Stockholm, November 1 through 15. At the Netherlands meeting, the following U. S. specialists were among the fifty participants: Dr. Samuel Z. Levine and Dr. Henry L. Barnett, Cornell University; Dr. Otto Bessey, University of Illinois; and Dr. Genevieve Stearns, State University of Iowa. This conference provided the first opportunity for scientists of the Netherlands, France, Belgium, and the U. S. who have done original research in the field of infant metabolism to meet and compare notes on recent trends and developments.

Included on the agenda of the Leyden meeting was a special section devoted to nutrition problems, particularly to the various methods for evaluating the nutritive status. Other topics discussed were: fetal nutrition, vitamin requirements, rickets, protein metabolism, fat metabolism, hormonal disturbances and clinical response of premature infants to ACTH, kidney functions, the importance of isotopes in metabolism research, human vs. cow's milk in feeding premature infants, and laboratory techniques for investigations.

The second meeting was attended by specialists from Norway, Sweden, Denmark, Finland, and the U. S. When the results of both conferences are compiled and published, it is expected that they will represent the most up-to-date survey of knowledge on infant metabolism gathered in the eight countries.

Nutrition Program in Central America. The first anniversary of the establishment of the Instituto de Nutrición de Centro America y Panamá was recently celebrated by an open house at the Institute's headquarters in Guatemala City. The Institute has organized field teams in each member country consisting of a physician, a nutritionist, a hematologist-parasitologist, and a nurse. In addition, the Institute has active programs in food analysis, hematology-parasitology and clinical chemistry, microbiology and immunology, blood vitamin analyses, serum protein studies, and amino acid chromotography in urine and foods. It is an organization sponsored by the Pan American Sanitary Bureau of the World Health Organization and is directed by Dr. Nevin S. Scrimshaw of the U. S.

One of its programs is the obtaining of seven-day dietary histories from representative population groups in Guatemala, El Salvador, Honduras, and Costa Rica. This work is under the supervision of Emma Reh, assigned to the Institute by the Nutrition Division of FAO. Lucile Sogandares, an A.D.A. member, is in charge of the program in El Salvador. Student nutritionists from Honduras, Costa Rica, and El Salvador are now being trained by the Institute.

Dietitians Active in Industrial Feeding Group. Two of the new officers of the Industrial Cafeteria Executives Association in New York City are dietitians. This year's President is Carol A. Terwilliger, Cafeteria Manager of the Seamen's Church Institute, while the new Treasurer is Miriam Nugent, John Jay Hall Dining Rooms, Columbia University. In addition, one of the three newly elected directors of the organization is a dietitian, Louise Wales, Lunchroom Manager of the New York *Herald Tribune*.

Food Service Manager's Workshop. In November, the Delaware State Board of Health held two food service managers' workshops, one in Dover, the other in Marshallton.

The program of the first workshop in Dover included the following discussions:

"Food Allowances and Menu Planning" Mary T. Davenport, Nutrition Consultant, State Board of Health

"Cooking Procedures to Retain Maximum Food Value" by Mary T. Davenport

"Food Purchasing" by Elizabeth M. Kimball, Chief Dietitian, Kent General Hospital, Dover

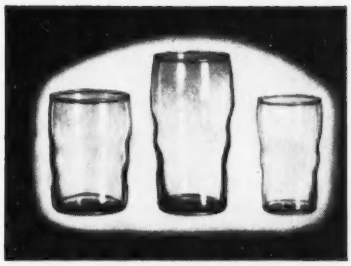
"Meat Handling" by Dr. J. L. Cherry, Division of Sanitation, State Board of Health

"Sanitation in the Institution" by W. P. Gainer, Sanitarian, State Board of Health

The program for the second meeting, held in Marshallton, included "Inventories and Food Costs" by Elizabeth M. Kimball; "Some Food Products and Equipment" by Ethel Emmert, State School Lunch Superintendent; and a film on meat cookery titled "The Way to a Man's Heart."

Inter-American Congress on Brucellosis. From November 6 to 10, the Third Inter-American Congress on Brucellosis was held in Washington under the joint sponsorship of the Inter-American Committee on Brucellosis, the U. S. Committee on Brucellosis of the National Research Council, and the Pan American Sanitary Bureau. Meetings consisted of formal discussions covering all phases of the disease—its medical, veterinary, public health, and economic aspects. Scientific papers were presented in the following five areas: bacteriology, veterinary research, research in human brucellosis, epidemiology, and control. Delegates from all countries of the western hemisphere attended as well as representatives from several European countries.

Olga Martinez. The A.D.A. office has been notified of the death in September of Olga Martinez, Nutrition Director, Bureau of Maternal and Infant Hygiene, Department of Health, Santurce, Puerto Rico. Miss Martinez had been a member of the Association since 1947.



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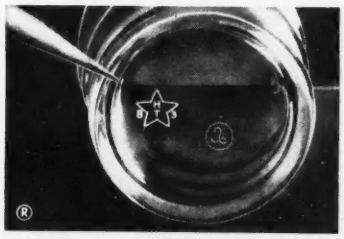

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Cool beverages in a light-weight glass that's extra strong

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All Libbey Safedge tumblers have chip-resistant rims . . . at the spot where most tumblers chip first! *Safedge* means "safety" for staff and patients. It also means savings through lower cost, less breakage, smaller needed inventory . . . protected by the famous guarantee: "*A new glass if the rim of a Libbey 'Safedge' glass ever chips!*" Ask your supplier for samples and prices, or write direct to Libbey Glass, Toledo 1, Ohio.

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Libbey HEAT-TREATED

Ann Lemons. Notice of the death of Ann Lemons, St. John's Hospital, Joplin, Missouri, on October 23. Miss Lemmons had been an A.D.A. member since 1944. She had also been employed by St. Mary's Hospital, Detroit, and Burge Hospital, Springfield, Missouri.

Nutrition Teaching Aids. The Nutrition Association of Greater Cleveland has recently issued a revised edition of its "Nutrition Teaching Aids," which consist of a set of twenty cards, fifteen of which illustrate by colored bar graphs the comparative food value of common foods, such as milk and coffee, fish and meat, and so on. The five remaining cards (new with this edition) can be used in teaching expectant mothers and contain information on food requirements, sources of calcium, and other pertinent data. Single sets are 50 cents; in quantities of 15 or more, the cost is 40 cents. They may be ordered from the Nutrition Association of Greater Cleveland, Room 1016, 1001 Huron Road, Cleveland 15.

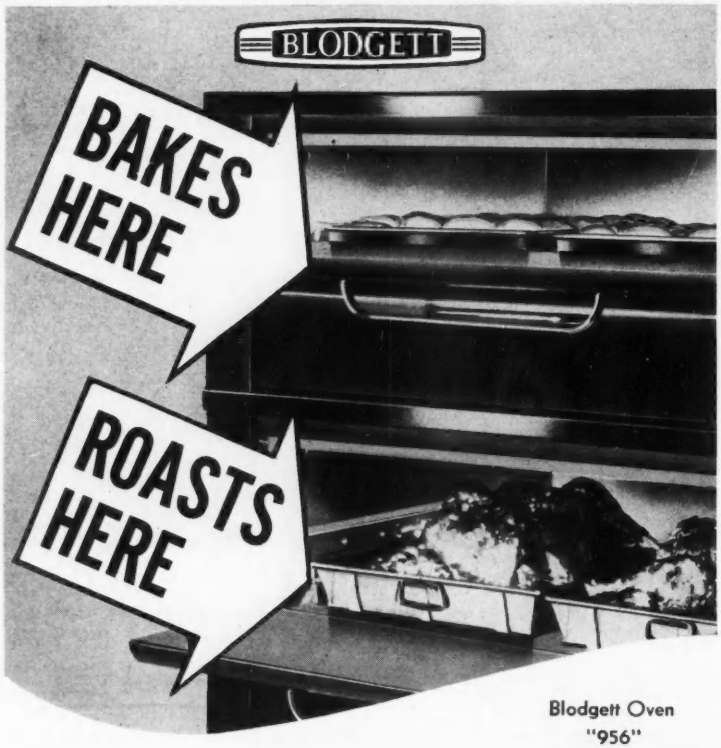
Booklet for Small Institutions. A twenty-three-page, mimeographed booklet titled "Suggestions for Menus, Food Buying, and Food Service in Small Institutions" has been prepared by the Nutrition Service of the Maine Department of Health and Welfare, Augusta. Designed for use by non-professional food workers in small institutions, the booklet contains information on menu planning, purchasing, storage, safety, and special diets. It is available for loan to members from the Lulu G. Graves Memorial Library in the A.D.A. office.

New Report of Research in U. S. An expanded and improved second edition of *Survey of Food and Nutrition Research in the United States* has been prepared by the Food and Nutrition Board of the National Research Council. It covers almost 4500 current projects being conducted by some 650 research organizations in the U. S. Supervisory personnel and subject matter are also indexed. The format has been changed from that of the first edition so that complete information on each project is given in one entry, rather than referring the reader to another section by code numbers. Projects are classified under the following fields and groups: physiology, chemistry, technology, microbiology, food acceptance, and nutrition education. Copies may be obtained from the Office of Technical Services, U. S. Department of Commerce, Washington 25, for $1.75. Checks should be made payable to the Treasurer of the United States.

Report on Philippine Rice Enrichment Program. In October, the Williams-Waterman Fund released a thirty-six-page report on the two-year program of rice enrichment which has been carried on in Bataan through the joint cooperation of the Williams-Waterman Fund, the Philippine government, and Hoffman-LaRoche, Inc. In the Philippines beriberi is the No. 2 killer, and the project was planned originally as a large-scale experiment to test the value of vitamin-enriched white rice to prevent beriberi.

After extensive clinical surveys in Bataan, the introduction of enriched rice in seven of the twelve districts was started in October, 1948. The other five districts served as a control area where ordinary white rice continued to be available. Because of the isolated location of the Bataan districts, it was possible to control the rice supply to the experimental areas. Enriched rice, prepared in a manner similar to that described in the JOURNAL in April (page 267) was used.

A gradual lowering of the beriberi death rate became apparent soon after the study was started, and by the end of the first year, the mortality figure had decreased over 67 per cent. In the control zone in the same period, there was a slight rise in beriberi deaths. By June, 1950, the beriberi death rate had dropped to zero in the experimental zone. In the twenty-one-month experimental period, 220 fewer deaths had occurred than in an equal period preceding October, 1948. Clinical resurveys made in 1949 indicated that nearly 90 per cent of those who had shown symptoms less than two years earlier were greatly improved in health, most of them being entirely symptom-free. Better rice had brought measurably better health to some 3,500



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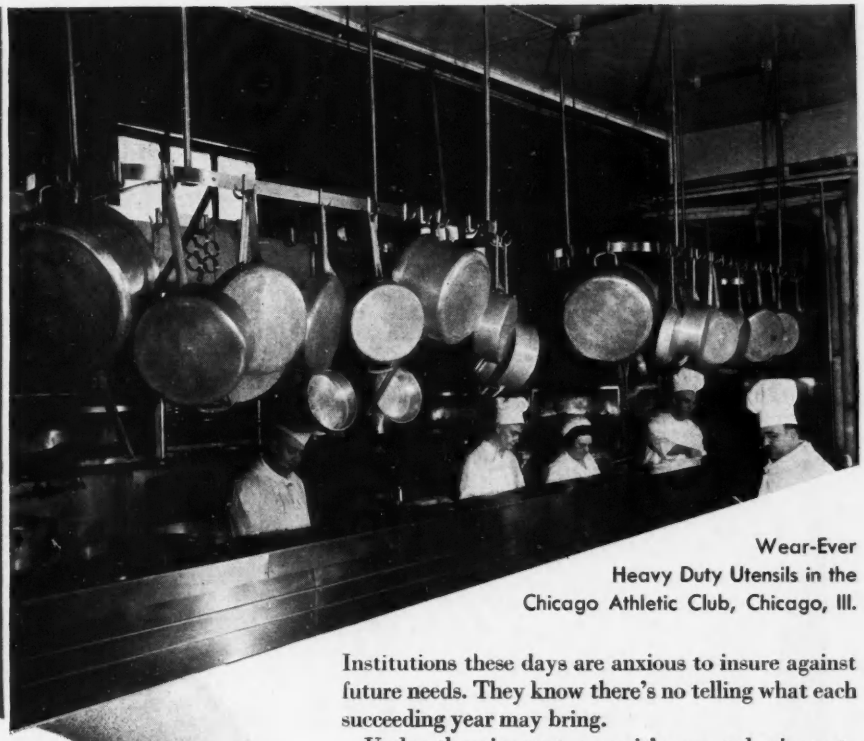

Wear-Ever Heavy Duty Utensils in the Chicago Athletic Club, Chicago, Ill.

Institutions these days are anxious to insure against future needs. They know there's no telling what each succeeding year may bring.

Under the circumstances, it's smart business to purchase long-lasting Wear-Ever *Heavy Duty* utensils. They're made from extra thick, extra tough aluminum alloy.

Being made of aluminum, Wear-Ever Heavy Duty utensils *spread heat fast and evenly*. This assures a self-stirring action that's ideal for simmering. It helps avoid scorching. And it assures fidelity to your recipes and cooking skill. Also, you will be delighted with the way these heavy duty utensils resist denting and gouging and keep giving service. There's a size and type for every need. Write for catalog. The Aluminum Cooking Utensil Company, 1312 Wear-Ever Bldg., New Kensington, Pa.

SUPER-STRONG AT POINTS OF HARDEST WEAR

Thick beveled edges

Double-thick bottom

OTHER FEATURES

- Large radius, spoon-fitting bottom corners. Make serving and cleaning easy.
- Light to handle. They're made from aluminum, the metal used in bridges, trucks and airplanes.
- Gleaming finish. Harmonizes with other kitchen metals used where heat is not a factor.

WEAR-EVER Aluminum

50TH ANNIVERSARY 1900 1950

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The Aluminum Cooking Utensil Company
1312 Wear-Ever Bldg., New Kensington, Pa.

Please send me your catalog of Wear-Ever Heavy Duty Utensils.

NAME.....

FIRM.....

ADDRESS.....

CITY.....ZONE.....STATE.....

MAIL TODAY

of the 65,000 people who ate the enriched grain.

Copies of the report titled "Better Health Through Better Rice"—a beautifully illustrated booklet printed in two colors—may be obtained from the Williams-Waterman Fund, Research Corporation, 405 Lexington Avenue, New York 17.

Plentiful Foods. The Production and Marketing Administration, U.S.D.A., expects the following foods to be plentiful during December:

Protein foods

Cheese
Chickens—broilers, hens, and fryers,
Eggs
Fish—fresh and frozen
Pork
Turkeys

Fruits and vegetables

Apples
Cranberries—fresh and canned
Cabbage
Grapefruit
Onions
Oranges
Potatoes, Irish
Potatoes, sweet

Other foods

Honey
Peanut butter

Army Rations. "Operational Rations Used by the Armed Forces" is the title of a new booklet published by the Associates Food and Container Institute, 1849 West Pershing Road, Chicago 9. In it is included information on the latest operational rations, ration supplements, and food packets used by the armed forces. Information is given as to weight, components in the relations, and caloric values. Photographs of each item are also included. Of special interest to hospital dietitians will be the "Ration Supplement, Special Item Pack, Hospital," from which liquid; "light," and soft diets can be adapted. It is composed mainly of concentrates, to which only water needs be added.

Erratum. On page 798 of the October issue of the JOURNAL, a misstatement appeared. The last sentence of paragraph five of the item titled "Growth-Promoting Powers of Antibiotics" should have read: "Those receiving vitamin B_{12} grew better than those which did not receive B_{12}."

Government Booklet on Freezing Methods. A publication titled *Procedures for Home Freezing of Vegetables, Fruits, and Prepared Foods* has been published by the Bureau of Human Nutrition and Home Economics, U.S.D.A., as Agriculture Handbook No. 2. The 106-page book is written by two food specialists, Elsie H. Dawson and Gladys L. Gilpin, and a bacteriologist, Howard Reynolds. Freezing methods are outlined for individual foods under two headings, one column including procedures most applicable to home freezing and a second column containing procedures compiled from the "literature review." The book, originally prepared as a mimeographed discussion guide for a home freezing conference in 1949, is available from the Superintendent of Documents, Washington 25, D. C., for 40 cents a copy.

Dietary Shortages in Teen-Agers. A recent survey of college freshmen women and high school students made by Ruth Tucker of the Rhode Island Experiment Station, showed that the students were not getting sufficient iron, vitamin A, ascorbic acid, and some of the B vitamins.

Blood tests showed that three-fourths of the high school boys and half of the high school and college girls were low in carotene. A third of the subjects reported low intakes of one or more dietary essentials. No deficiency diseases were found in the physical examinations, but many students had early symptoms of roughness or inflammation of the skin or abnormalities in the mucous membranes of the eyes, mouth, or lips.

Family Use of Rice. The Bureau of Agricultural Economics, U.S.D.A., reports that 9 out of 10 homemakers use rice, and more than half serve it 4 to 15 times a month. Rice was reported as more popular when served with the main course than as dessert, although 76 per cent of those using rice said they use it in desserts. Two-thirds of the homemakers said their families ate prepared breakfast foods of rice. Housewives prefer to buy rice packaged in boxes or bags, preferably in boxes with transparent windows. Half of the women reported that they knew about the recipes on the packages, and about 4 in 10 use them. The rest cook "from memory" or from cookbooks. Most

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WITH Milapaco
TRAY COVERS
Look at this list of advantages you get when you make Milapaco Tray Covers your STANDARD.
YOU SAVE MONEY 3 WAYS:
• Linen costs are reduced
• Laundry expense is lower
• Less storage space is needed
You increase efficiency by speeding up kitchen service and reducing noise and clatter.
Doubly important is the fact that Milapaco Tray Covers help your patients, too. Clean and attractive, they improve the appetite appeal of your tray.
It will pay you to investigate Milapaco Tray Covers. Also, ask your paper supplier about Milapaco personalized printed Tray Covers, and extra soft facial tissue napkins.
MILWAUKEE LACE PAPER COMPANY
1306 E. Meinecke Avenue, Milwaukee 12, Wisconsin

SOME MOLD IS GUARDED LIKE GOLD!

At Borden's cheese factory in Van Wert, Ohio—the largest in the world—the rooms where the cheese-curing molds are grown are as carefully guarded as bank vaults.

This security measure keeps out undesirable molds which could completely upset the delicate interaction of desirable molds in curing cheese.

For example, Borden painstakingly protects *Penicillium camemberti*, the beautiful white mold that helps give **Borden's Military Brand Camembert** its distinctive flavor.

The Camembert plant is air-conditioned, with ultra-violet lights placed at strategic points for air sterilization, and during every stage of the curing process, the temperature and humidity are watched constantly by folks who wear freshly-laundered uniforms every day.

Since each mold produces a cheese always *uniform* in flavor and texture, it's worth being guarded like gold.

These strict standards of quality control are observed in the making and processing of all Borden's fine foods.

So, whether cheese, fresh milk, ice cream, evaporated milk or a prescription product like *Biolac*, *Mull-Soy*, *Dryco*, or *Klim*, this is always true: "If it's Borden's, it's *GOT* to be good."

THE Borden COMPANY

350 Madison Avenue
New York 17, N. Y.

for quick relief from dishwashing headaches

buy COLT AUTOSAN

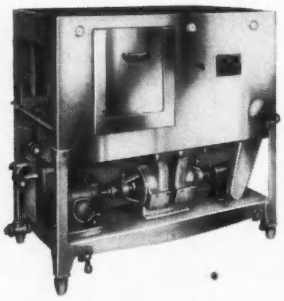
If your kitchen efficiency is badgered by inadequate dishwashing equipment, ask your dealer about Colt Autosan, the one best buy in dishwashing equipment.

He can tell you what Colt Autosan Dishwashers' built-in durability means to you in dollars and cents savings and how Autosan users have learned to depend on years and years of trouble-free operation. At the same time, he can tell you about the new Colt Autosan Mixing Machines . . . a size to fit every kitchen. Or, if you prefer, write for complete line information. Colt's Manufacturing Co., Hartford 15, Connecticut.

COLT AUTOSAN RACK CONVEYOR MODELS

The controlled speed conveyors eliminate guesswork . . . assure proper time for adequate washing and sanitizing.

Model RC-2
2400 dishes per hour

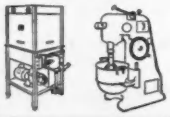


Model R-3 (Illustrated)
4800 dishes per hour

Model R-4
6000 dishes per hour

Model R-8
9000 dishes per hour

COLT AUTOSAN



DISHWASHING, SANITIZING, DRYING and MIXING MACHINES

women reported cooking rice by washing it, then boiling it in plain water for about 25 min. About half said they run water through the rice either during the cooking period or afterward.

News of State Associations

Illinois Dietetic Association. The theme of the fall meeting of the Illinois Dietetic Association held November 3 and 4 in Springfield, was "New Trends in Dietetics." On Friday afternoon, the program consisted of a skit on employee training by home economics students of the University of Illinois, and three talks as follows:

"Psychological Factors in Employee Training," by Homer L. Gammill, Assistant Professor of Industrial Psychology, University of Illinois

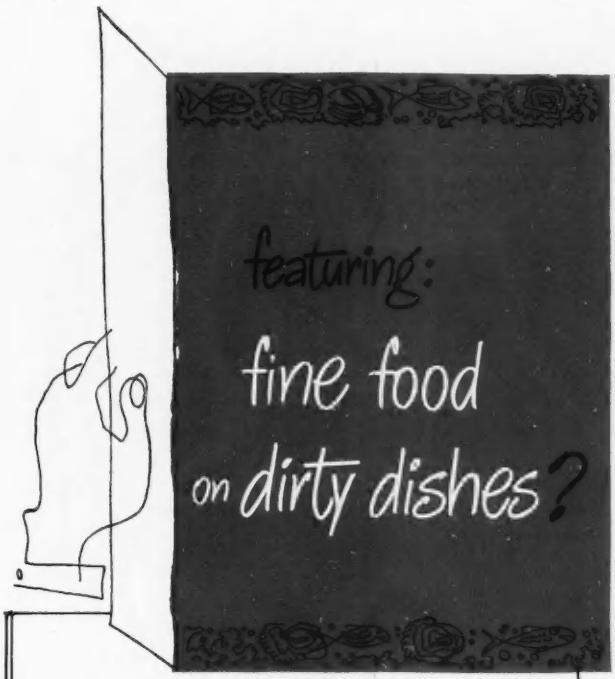
"Dietetics and Public Health" by Dr. Roland R. Cross, Director, Illinois Department of Public Health

"Plastic Dinnerware" by W. H. McHale, American Cyanamid Company, New York City

On Saturday morning a business meeting was held, at which a report of the A.D.A. convention was made, as well as a progress report of the University of Illinois study on diets for older people. Lillian Storms Coover, A.D.A. President, spoke on Association Affairs. In the afternoon, Elizabeth Caso, Nutritionist for the U. S. Public Health Service, Boston, discussed the new recommendations for calculation of diabetic diets.

New officers of the Illinois Association for 1950–51 are: President, Leila Colwell, Evanston Hospital, Evanston; President-Elect, Wilma Robinson, Illinois Department of Public Health, Springfield; Secretary, Elizabeth Emmons, Wesley Memorial Hospital, Chicago; and Treasurer, Charlotte Ludwig, Michael Reese Hospital, Chicago. New section chairmen are: Community Nutrition, Ethel J. Boyle, Illinois Department of Public Welfare, Springfield; Diet Therapy, Mame Dentler, Northwestern University Medical School, Chicago; Food Administration, Lee August, Englewood Hospital, Chicago; and Professional Education, Josephine Schildberg, Presbyterian Hospital, Chicago.

Indiana Dietetic Association. Recently the Indiana Dietetic Association has sponsored exhibits at the Indiana State Fair, the Indiana Restaurant Association Convention, and the International Dairy Exposition. The State Fair was held in Indianapolis from August 31 through September 8. The theme of the dietetic booth was "Eat to Lose or Eat to Gain," and the exhibit presented a colorful display of the Basic Seven foods which should be included in the normal, reducing, or gaining diets. Persons visiting the booth were weighed and measured, and the results compared with a chart showing normal weight for height and age. Over 2000 specially prepared leaflets showing normal, low caloric, and high caloric diets were



You're proud of your menus. Your chef's *good*. You serve finest quality foods. Surroundings are smart. Service is smooth. Looks like plenty of customers . . . plenty of profits ahead.

You're rushed . . . garbage-laden dishes go right into the dishwasher. Soil load zooms. Washing solution can't get dishes clean . . . they come out filmy, greasy.

You're losing customers who say nothing to you—plenty to their friends. Your reputation's slipping on a greasy plate. And look where your profits are—on the skids.

Not when you Pre-rinse & use Calgonite!

1. Pre-rinse

The first step in proper mechanical dishwashing is *pre-rinsing*. Pre-rinsing removes heavy soil—washing solution maintains cleansing efficiency through entire washing period. Pre-rinsing can easily be worked into a fast, efficient, *effective* dishwashing operation. Write for simple design of *Pre-Rinse sink*.

2. Calgonite

The second step in proper mechanical dishwashing is Calgonite. Calgonite banishes washing film . . . softens water . . . stimulates powerful alkaline cleansing in soft or hard water . . . prevents scum and scale on dishes, in dishwasher. Compare Calgonite in *your* dishwasher with *any* other compound on cost-per-*clean*-dish.

Write for free dishwashing booklet "Better Ways To Cleaner Wares." Calgon Inc., Hagan Building, Pittsburgh 30, Pa.

Calgonite® LETS YOU WASH DISHES AND GLASSES CLEAN TOGETHER

Salvajor

SANITATION
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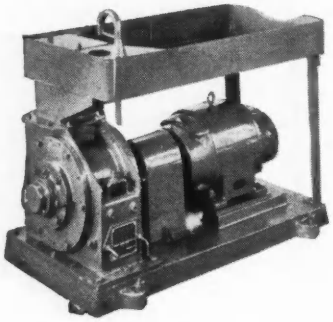
THE POPULAR SALVAJOR SCRAPPING & PRE-WASH MACHINE

The only unit which in one operation scraps and pre-washes dishes; prevents loss of small tableware in garbage and collects food scraps for easy sanitary disposal. Salvajor "Junior" Model ideally fits into diet kitchens. Ask about it.



WasteXit
FOOD WASTE DISPOSERS

Not a hammermill type disposer. WasteXit actually shear cuts food waste of all kinds and disposes into sewer as flowing liquid. Developed for and proved by the armed forces. Capacities to suit any requirement.

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Please send information on ( ) Salvajor Scrapping & Pre-Wash Machine ( ) WasteXit.

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distributed. The same booth was exhibited at the Indiana Restaurant Association convention held in Indianapolis October 3 through 5. This was the first time that the Indiana Dietetic Association has exhibited at this meeting. At the International Dairy Exposition held October 7 through 14 in Indianapolis, the A.D.A. food model exhibit of food for a child age ten to twelve years old was shown. Leaflets with suggested menus for a child were distributed. Dietitians from all parts of the state helped to staff the booths at these three meetings.

Iowa Dietetic Association. The annual fall meeting of the Iowa Dietetic Association was held in Iowa City on November 8. Reports of the A.D.A. convention in Washington were given to the members. The program included a talk about the Midcentury White House Conference on Children and Youth by Dr. R. H. Ojemann, Associate Professor of Educational Psychology, State University of Iowa; and a discussion of parenteral feedings by Dr. Richard D. Eckhart of the University Hospital.

The *Des Moines Dietetic Association* entertained the Home Economics Club at its October meeting. The program featured a talk on the school lunch program by Helen McCleary Hubler, who directs home economics education in Des Moines.

Louisiana Dietetic Association. The Louisiana Dietetic Association met in Shreveport on June 30 and July 1. The first speaker on the program was Margaret Moore, Consultant on Nutrition, Louisiana Department of Health, who spoke on "Public Health Nutrition." She was followed by Graham Price, Director of Nursing Education, Northwestern State College, Natchitoches, whose topic was "Nursing Education." Other papers given were:

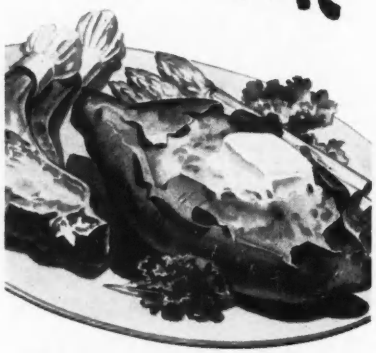
"Intrauterine Fetal Feeding" by Dr. William F. Guirerro, Southwestern Medical College, Dallas

"Aging Women" by Dr. Margaret A. Ohlson, Michigan State College, East Lansing

"Admitting and Business Procedure" by Joseph W. Hinsley, Assistant Director, Touro Infirmary, New Orleans

Dr. Ohlson, who acted as official representative for the A.D.A. at the meeting, also talked to the members on "How Much Do You Know about Your Association?" The A.D.A. Kodachrome slides were shown.

North Carolina Dietetic Association. On November 9 and 10, the North Carolina Dietetic Association met in Fayetteville for the annual state convention. Officers are: President, Delilah Siler, Rex Hospital, Raleigh; President-Elect, Virginia Newman, Presbyterian Hospital, Charlotte; Vice-President, Helen Moxley, Women's College of the University of North Carolina; Secretary, Mary Anderson, Charlotte Memorial Hospital, Charlotte; and Treasurer, Florence Pittman, Eastern North Carolina Sanatorium, Wilson.



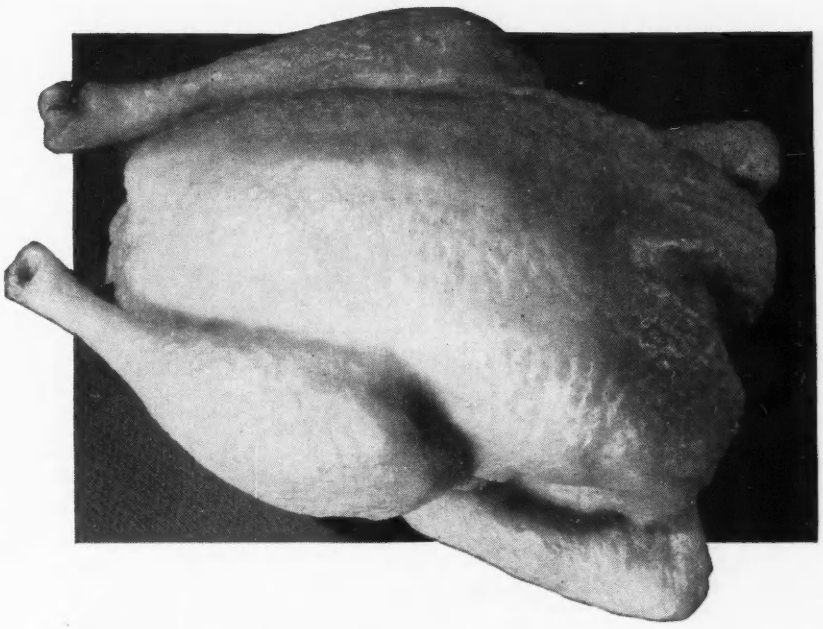
LOUISIANA GOLDEN YAMS

Dress up your plates — pamper your food budget with Louisiana Golden Yams, the juicy-textured kind of sweet potatoes everyone prefers.

Appetites spark to the glowing color and fine flavor of this nutritious, energy food. Serve them baked, mashed, candied or fried — as a *vegetable*, as *dessert*. They cost so little, taste just right — with anything.

THEY'RE Sun-ergized

TODAY'S CHICKEN . . . In Modern Nutrition



NUTRITIOUS as well as delicious, poultry meat is an excellent source of biologically complete *protein*. High-quality protein such as it supplies has increasing medical acceptance in protective and maintenance diets for all ages.

Moreover, this popular food supplies needed minerals and vitamins in useful amounts.(1)

And now, new developments in scientific poultry meat production have brought added versatility and values to this traditional favorite.

For example, the "Chicken-of-Tomorrow" is a specially bred and fed type of meat-bird that is tender enough to broil . . . small and young enough to fry . . . plump enough to roast!

Special breeding, plus scientifically formulated diets, brings this bird to prime condition weeks sooner than conventionally raised flocks. Raised the year 'round on a production-line basis, costs are kept low . . . enabling low-income families to enjoy its many advantages.

In the large concentrated producing areas . . . (over 487 million were raised in 1949) it's immediately available to nearby consumers as fresh chicken . . . and comes to consumers everywhere as frozen-fresh chicken in attractive packages with all the appetite appeal and goodness sealed in.

(1) Per therm (1,000 calories) of edible material:

Calcium.....	83 mg.	Riboflavin....	0.9 mg.
Iron.....	10 mg.	Niacin.....44.3 mg.	
Thiamine....	0.6 mg.	Protein.....	104 gm.

Dr. L. R. Maynard, Cornell University — Pgs. 345-360
"The Journal of Nutrition" Oct. 10, 1946 — Vol. 32 — No. 4.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

This seal signifies that all statements herein pertaining to nutrition have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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A NON-PROFIT ORGANIZATION

Devoted to Research and Education Work in Behalf of the Poultry Industry

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LOW SALT DIET

Cellu Canned Vegetables and Vegetable Purees. Packed Without Sugar, Salt or Other Seasoning.

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18 Popular Vegetables and Purees Available

For cardiac patients, and others on sodium-restricted and salt-restricted diets. Cellu Canned Vegetables and Cellu Purees are packed without any added seasoning—condiments are easily added if conditions permit. Use Cellu Canned Vegetables and Purees to add variety to restricted diets . . . Corn, Asparagus Tips, Peas, Stringless Beans, Pureed String Beans, Carrots, and Peas, and ten other favorites to choose from. Food values printed on the label for convenience in planning diet meals.

Send for FREE CATALOG of Cellu Dietary Foods

UNSALTED TOMATO JUICE

For a special treat, serve Cellu Tomato Juice. As tasty and refreshing as ripe, garden-fresh tomatoes. No seasoning added.

CELLU PURPOSEFULLY PREPARED *Dietary Foods*

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DIETETIC SCALE

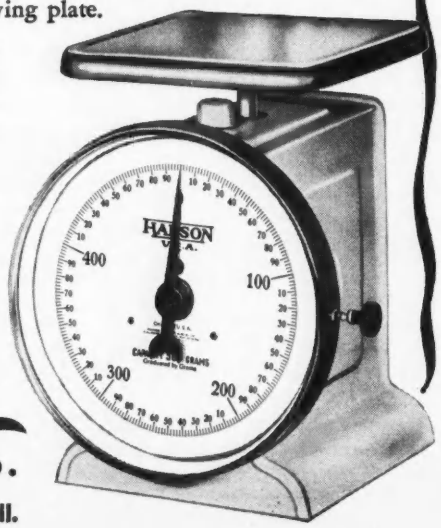
The standard diet scale of the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate.

Capacity 500 grams by grams. Stainless steel platform, white enamel body, easy to keep clean.

Model 1411 (illustrated) has glass protected dial, price $15.00

Model 1440 enamel dial, price $10.00

See your Supply House



HANSON SCALE CO.
Est. 1888
525 North Ada St., Chicago 22, Ill.

Pennsylvania Dietetic Association. The October meeting of the *Philadelphia Dietetic Association* was held jointly with the Philadelphia Home Economics Association and the Home Economists in Business. A food preparation and equipment demonstration was provided by the Philadelphia Electric Company. In November, the meeting included a trip through the Institute for Cancer Research and the Lankenau Hospital Research Institute, as well as a talk by Dr. Stanley P. Reimann on "Relationship between Cancer and Nutrition." Guests at this meeting were visiting and public health nurses in the Philadelphia area.

Association Activities

Representatives at State Meetings. Official A.D.A. representatives at recent state dietetic association meetings were as follows:

November 11—Winifred Howard Erickson and Margaret L. Ross, Minnesota Dietetic Association, Rochester

November 16–17—Ruth M. Yakel, Missouri Dietetic Association, St. Louis

November 17–19—Fern Gleiser, Tennessee Dietetic Association, Nashville

December 2—Marguerite Pettee, Arizona Dietetic Association, Phoenix

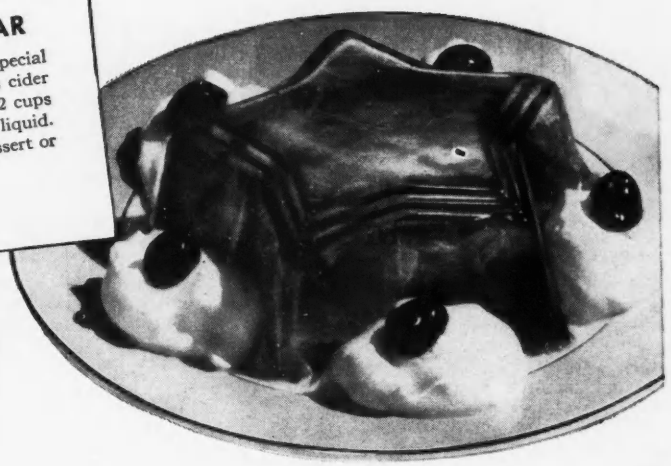
In addition to these state meetings, a local meeting was attended by one of our staff members. Mable MacLachlan was the guest at the November 6 meeting of the St. Louis Dietetic Association.

Midcentury White House Conference on Children and Youth. Dr. Ercel S. Eppright and Anne Stewart Miller represented the Association at the White House Conference held in Washington, December 3 to 7. Exhibits were presented at the National Guard Armory in conjunction with the meetings, and A.D.A. displayed the food model exhibit, "Food for Health—Meals for a Child 10–12 Years Old." Members of the District of Columbia Dietetic Association took charge of the booth.

Publicity for Dietetics. We continue to receive publicity on a national scale. Plans were initiated over a year ago for an article in *The Camp Fire Girl.* Now, the November, 1950 issue carries "Thought for Food" by Ruth Roth and Fern Storer, two of our Cincinnati members. Miss Roth and Mrs. Storer wrote the article at the request of the national Vocational Guidance Committee. Read it—it tells about our profession simply and interestingly.

The November issue of *Seventeen* carries another article which gives attention to dietetics as part of the overall field of home economics. Look on page 88 for "Looking Toward Four Worlds" by Eileen Murphy. Our Educational Director, Mable MacLachlan, gave assistance to the editors of *Seventeen* in developing the material presented.

Let genuine JELL-O DESSERTS help you cut your food costs!



CIDER AND CRANBERRY STAR

Tangy, sparkling Strawberry Jell-O is a special holiday treat when made with equal parts cider and cranberry juice instead of water. Add 2 cups sugar and 2 teaspoons salt for each gallon of liquid. Mold or cut in stars. Serve as a festive dessert or salad. Costs only about . . .

3½¢ A SERVING!

CHRISTMAS PARFAIT

A red and green beauty for Christmas! Shimmering cubes of Raspberry and Lime Jell-O, layered with chilled Jell-O Vanilla Pudding between the colors. An eye-catching taste-tempter for less than . . .

3¢ A SERVING!

LEMON FLUFF PIE

Lemon meringue pie becomes Lemon *Fluff* Pie when you fold tart, tangy Jell-O Lemon Pie Filling, *hot*, into egg-white meringue. Let filling set in baked pie shell. Add that extra touch with a garnish of maraschino cherries and green leaves. Yours for less than . . .

3¢ A SERVING!

As you may know, desserts alone account for up to 20% of total food costs in restaurants and hotels.

And when you realize that there are literally *hundreds* of desserts you can make with genuine Jell-O products that cost you as little as 1½¢ to 5¢ a serving, you'll see what a saving they represent. Especially if you consider that many desserts cost 2 or 3 times as much.

And these Jell-O desserts are *quality* desserts! Jell-O is the brand most of your customers know and like best . . . the brand that's been their favorite for over 50 years.

So why don't *you* start cutting costs with genuine Jell-O flavored gelatin and Jell-O Puddings and Pie Fillings. Any slight difference in initial cost is outweighed by your gain in customer acceptance . . . quality . . . and volume!

FREE OFFER!

Write in or ask your General Foods representative for the wonderful new "GF Album of Desserts." This 24-page illustrated booklet gives directions for preparing 68 different desserts with Jell-O products, and includes the cost per serving of each.

Write to General Foods Corporation, Institution Food Service, 250 Park Avenue, New York 17, New York.

Products of General Foods

JELL-O, JELL-O PUDDINGS and PIE FILLINGS

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Glamour mentioned us again—this time in a list of new career pamphlets and books. (See the November issue, page 156.) Our pamphlet is "Dietitians Today."

A.D.A. Exhibit Wins Award. The Kodachrome exhibits, "Dietetics. . .The Career with a Choice" is almost three years old, but it is still bringing the Association credit. It was shown at the annual meeting of the American Public Health Association in St. Louis, October 30 to November 3. The Scientific Exhibits Committee of A.P.H.A. is seeking to encourage exhibitors to prepare exhibits that are more meaningful and interesting. As a step toward this goal, each year the Committee gives awards to those scientific exhibits that are judged most interesting and effective. Our Kodachrome exhibit won such an award this year.

A.D.A. Representatives. Clara E. Childress attended the Conference on Higher Education in the National Service, which was held in Washington, D. C., October 6 and 7. This conference was sponsored by the American Council on Education.

Recently the American Standards Association recommended a project to the National Restaurant Association involving the establishment of sizes for cooking and baking utensils and other provisions. At the request of the National Restaurant Association, A.D.A. was invited to appoint a representative and an alternate to attend a meeting in New York City on October 23. Our representative was Lucille Streeter, Food Service Director, Macy's Department Store. Acting as alternate was Alta B. Atkinson of the Institution Management Department, Teachers College, Columbia University.

Jo Beth Johnson, President of the Utah Dietetic Association, attended the inauguration of the eighth President of the Utah State Agricultural College, Louis Linden Madsen as A.D.A.'s representative. The ceremony took place in Logan on November 3.

Loucille Langham Taylor, President-Elect of the Texas Dietetic Association, was invited to represent A.D.A. at the dedication of the Science Hall of Incarnate Word College in San Antonio, November 3.

Dr. Ercel Eppright represented A.D.A. at the School Food Service Association meeting in Kansas City, Missouri, November 8 to 10. Dr. Eppright also presented a paper on the program.

Public Relations Meeting. On November 11, an informal meeting was held in the A.D.A. office to plan for the coming year's public relations and vocational guidance program. Members of the national Public Relations, Vocational Guidance, and Educational Exhibits Committees, and of the A.D.A. staff were present.

A.D.A. on the Air. During our convention in Washington, representatives of the Voice of America contacted Thelma Pollen, our Public Relations Director. As a result, Elizabeth Perry and Lillian Storms Coover made a wire recording which was sent to New York for broadcast overseas. This broadcast was intended to show people in other countries that progressive women in the U. S. are working in the interest of the general welfare of people throughout the world.

During the convention the air waves also carried newscasts of A.D.A. to people at home. Nine broadcasts were made from Washington by A.D.A. members. In addition, two television programs featured our members. Dr. E. Neige Todhunter talked on nutrition, using live mice to illustrate the effects of deficiencies. And Marye Dahnke demonstrated the making of hors d'oeuvres.

During the coming month, two more radio programs will be presented from New York with our members featured.

Publicity by Food and Equipment Companies. During October, public relations directors and presidents of sixty-one food and equipment companies received letters from A.D.A. asking that they cooperate in focusing attention on the jobs of their nutritionists and home economists. This request was made in order that more people would become aware of such job categories. A gratifying response has been received in the Association office.

Introducing "Joanie." One of our members, Doris Zumsteg, is the originator of a clever and popular life-size figurine which is all that a home economist should be. Called "Joanie," the doll is an average, cute, young home economics graduate. Her head represents her basic home economics education. She wears a white uniform which is representative of many "food" jobs. Then there is a skirt and jacket which snap on to show her ready for other jobs along such lines as editorial work and teaching. Other props include a microphone, a suitcase, an automobile license, and a glamorous hat. All of these props are explained in a prepared speech which goes with "Joanie." This talk indicates the job possibilities, qualifications, salary, and vacation aspects of each sub-division of the home economics field. The doll, with props, fits in a packing case 2 ft. by 3 ft. weighing about 10 lb. If you are interested in borrowing "Joanie," write to Miss Zumsteg, Consumer Service Department, General Baking Company, 420 Lexington Avenue, New York 17.

Members Participate in Workshop. Six of our members participated in the workshop held by the School of Nursing, University of Pittsburgh, November 27 to December 8. "Nutrition in the Basic Professional Curriculum" was the overall topic considered.

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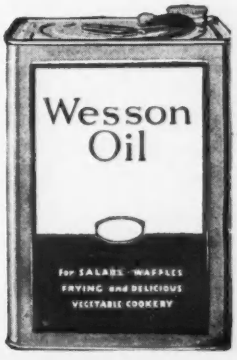

WESSON OIL AND SNOWDRIFT SALES COMPANY

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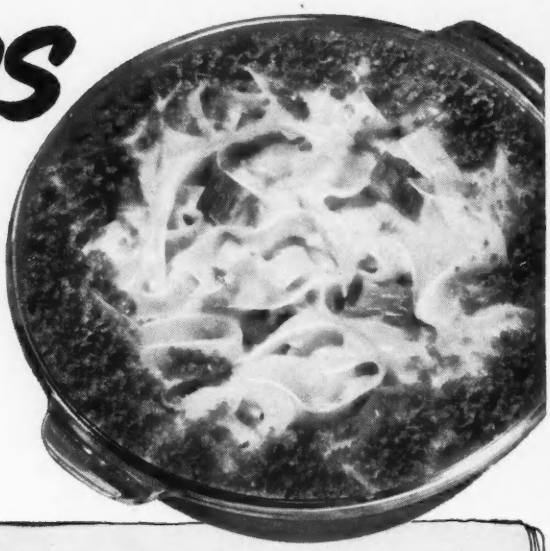
from Casseroles

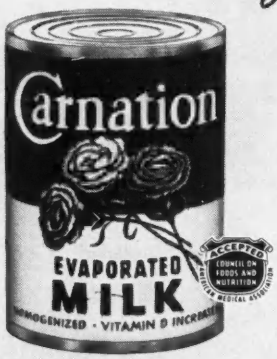


HAM AND NOODLE CASSEROLE

1 6-oz. pkg. noodles, cooked
¾ cup Carnation Evaporated Milk
¾ cup water
3 tablespoons each butter & flour
1 teaspoon each salt & paprika
¼ teaspoon dry mustard
1½ cups cooked ham, diced
Buttered bread crumbs

Drain noodles. Combine Carnation and water to make 1½ cups rich whole milk. Melt butter in saucepan; blend in flour and seasonings; stir in ½ cup milk; add rest of milk; blend. Cook until thickened. Combine noodles, sauce and ham. Pour into buttered 2-quart casserole. Top with crumbs. Bake in moderate oven (350°) 20 minutes. Serves 6 to 8.

Look what your class can do



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CARNATION VELVET FUDGE

3 squares (3 oz.) unsweetened chocolate
3 cups sugar
2 tablespoons corn syrup
1 cup Carnation Evaporated Milk, undiluted
3 tablespoons butter
1 teaspoon vanilla
¾ cup chopped nut meats

Cut chocolate over sugar into 2 qt. saucepan. Add syrup and Carnation. Stir over medium heat until sugar dissolves. Bring to a boil; cover and cook 2 minutes. Uncover and cook, stirring occasionally, to 234° F. or until soft ball forms when a small amount of candy is dropped into cold water. Remove from heat. Add butter; let cool without stirring until candy is 110° F. or pan is cool to palm of hand. Add vanilla. Beat until thick and no longer glossy. Add nut meats and spread in buttered pan. Makes 1¾ pounds.

to Candy

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Published by THE AMERICAN DIETETIC ASSOCIATION

PUBLISHING OFFICE: MOUNT ROYAL AND GUILFORD AVENUES, BALTIMORE 2, MARYLAND
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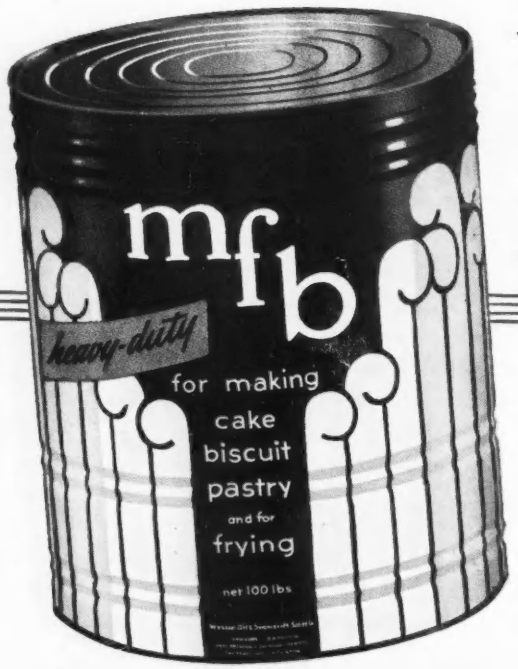

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